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ON THE INDICATIONS FOR MASTOID OPERATIONS IN ACUTE PURULENT OTITIS MEDIA, WITH FOUR ILLUSTRATIVE CASES.

BY H. KNAPP.

A GREAT deal has been said and written of late on operative interference in acute middle-ear disease. It is a subject of high importance on which the aurist should have definite opinions, for he must be prepared to act on short notice in cases in which temporization may be fatal, whereas, on the other hand, aggressive, not to say meddlesome, surgery may inflict on the sufferer an operation that has not always proved devoid of danger. The question is how far and how long, in a given case, is conservative treatment permissible and commendable, and when is the operation justifiable and urgent. From my practice of the last eight months, I beg to select four cases which may serve as a basis for the consideration of the above question.

Where and how long is conservative treatment commendable?

We may fairly say that every marked case of acute otitis media extends more or less into the mastoid. This, of course, is not a sufficient reason for operating. When the atrium is the chief seat of the inflammation and the perforation of the membrana tympani is in the pars tensa, nobody thinks of resorting to opening the mastoid, because the very great majority of these cases recover without it. Even when the symptoms of the mastoid are pronounced, we need not be in a hurry to operate. A certain degree of fever, especially in children, spontaneous pain, pain on mild or strong pressure, headache, puffiness of the integument of the mastoid, and even bulging of the upper-posterior end of the ear canal, may disappear and the patient recover perfectly

by cold applications—the Leiter coil,—rest in bed, and cleansing the ear with cotton-tipped probes, and in profuse discharge *gentle* syringing with a weak antiseptic solution, and insufflation of small quantities of impalpable boric-acid powder. Paracentesis when the drumhead is bulging, or the perforation insufficient, should be one of the earliest as it is one of the most beneficial measures.

How is it when the inflammation is principally in the attic? The affection is then generally considered much more dangerous and very obstinate. Some authors declare that such cases never recover without operation. This statement, to my mind, goes too far, and in support of my opinion I beg to detail one out of a fair number of similar cases that are at my disposal.

CASE I.—**Acute Purulent Otitis Media with Involvement of Attic and Mastoid. Perfect Recovery without Opening of Mastoid.**

Dec. 15, 1894.—Mr. J. St., a stout, healthy-looking gentleman of sixty-seven years of age, came to my office complaining of severe pain and deafness in both ears. He said that only once before he had suffered from ear disease, namely eight years ago. His left ear had been discharging for a time. During the last two or three weeks he had been troubled with a cold. A little over a week ago he took a Turkish bath. Five days later he suffered intense pain in his left ear. On the third day following, the left ear discharged, and the pain was relieved for a time. Last night it had returned and become most intense.

I found pus in the left ear canal. After removing it the upper-posterior wall of the canal was red and swollen, the drum membrane red, its upper-posterior part protruding down and forward, the seat of the perforation not distinct. The left mastoid process was tender on pressure not only immediately behind the upper part of the ear canal, but also on the tip and the posterior border. The right drum membrane was uniformly red, its posterior part bulging. He still suffered from coryza, his tonsils were swollen, and he had pain on opening his mouth. He could understand only loud conversation directly spoken into his ears. His urine was normal. There was little or no fever throughout the whole course of his illness. I ordered him internally tinct.

of nux vomica, and for his ears syringing with warm boric-acid water and insufflation of boric-acid powder, and recommended him to stay in bed.

Two days later, December 17th, he came again. Both ears discharged profusely. The same treatment was continued.

Dec. 19th.—More pain in and behind the ears and also pain in head. Left mastoid very tender. Discharge profuse. Patient entered the hospital, where the cleansing and sterilizing of the ears were done in the same way, and Leiter coils were applied to both. This treatment relieved him for two days, then the cold coils feeling no longer grateful were left off.

The discharge in the *right ear* stopped the day after, but the ear was painful and the upper-posterior part of the drum membrane considerably bulging. A free paracentesis was made through the bulging part. This liberated muco-pus. The discharge continued free for several days, then gradually subsided and stopped in two weeks, together with the pain in and behind the ear. The hearing gradually improved, much to the satisfaction of the patient.

The *left ear*, however, did not follow such a favorable course. On the second day of the application of the Leiter coil the patient not only felt more comfortable, in general, but there was an improvement in the condition of the ear. The drumhead appeared less swollen, and a large perforation, apparently in front of the handle, was noticed. Soon after the pain in ear, mastoid, and head returned. Shrapnell's membrane and the posterior-upper part of the ear canal were markedly bulging, whereas the otorrhœa had somewhat diminished. A free incision was made through the posterior portion of Shrapnell's membrane and the adjacent part of the tympanic membrane proper, down to the bone. On Politzer's experiment considerable pus was evacuated, and there was a free discharge of non-offensive pus, now for two weeks. The patient was kept in bed the greater part of the day; he had but little discomfort, and began to hear better. On January 1, 1895, however, he complained of neuralgic pain in left side of head, especially in the occiput, and there was sharp pain produced by pressing upon the tip of the mastoid. In front of the tip there was an oval swollen gland, sensitive to pressure, and the skin seemed also a little tumefied. I ordered hot-water baths in the ear for half an hour in the evening, and kept the mastoid region covered with warmed absorbent cotton.

The next day the pain in head and mastoid was almost gone. Shrapnell's membrane and the whole posterior half of the *Mt.* bulging. Discharge free.

From now, January 3d, a steady improvement began. The membrana vibrans became pale and was applied to the promontory as was ascertained with a probe. *In the posterior part of Shrapnell's membrane, clear above the edge of the lower fold, there was a conical projection of proud flesh through which pus escaped, and when wiped away with a cotton-tipped probe, pus soon escaped through this opening again, either spontaneously or by pressure with a probe upon the surrounding parts.* For two or three weeks this crater kept discharging pus, in larger or smaller quantities, but on the whole with a gradually diminishing tendency. The discharging cone-like projection was for a whole week the only red part of the drum membrane, then it also paled, and dwindled away. At the time of the discharge of the patient, January 30, 1895, it appeared only as a closed small nipple.

After Politzer's experiment, the hearing for whispering voice was normal in both ears. All pain and discomfort were gone.

On February 2, 1895, the patient was perfectly well. *v* R = $\frac{20}{20}$, L $\frac{20}{20}$ —; *h* R $\frac{2}{24}$, L $\frac{1}{24}$, which in a man of sixty-seven may be considered normal hearing.

At the time this is written, August 25, 1895, I can state that the patient's recovery has remained perfect and his hearing is as good as before the attack.

This case presents a typical example of mastoid involvement. The communication between mastoid antrum and attic was twice interrupted, but re-established by cold applications to the mastoid, and a paracentesis of the drum down to the bone. Deep paracentesis affords relief by the diminution of the engorgement of the soft parts in and around the antrum canal, and cold applications serve the same purpose by reducing the congestion.

The attic was not greatly affected, though the pus escaped through a perforation in Shrapnell's membrane, for symptoms of meningeal irritation, such as headache, and particularly occipital pain, were only moderately intense.

That the whole process was local, was proven by the almost total absence of fever.

How extensively the cells of the mastoid were involved it is

difficult to say. The painfulness at the tip seems to indicate that a large part of the interior of the mastoid was involved, yet the aditus ad antrum proved sufficient for the escape of the pus.

Lately BROCA and LUBET-BARBON, in their admirable treatise *Sur les Suppurations de l'Apophyse Mastoide*, p. 64, describe a case in which the suppuration and caries affected chiefly the cells adjacent to the ear canal, which they call *les cellules limitrophes*. In these cases not only the end, but the whole length, of the posterior wall of the osseous canal is bulging. They may be cured by a thorough incision of the posterior wall of the canal, down to the bone. These cases are not unknown, and I have cured a well-pronounced example of the kind in the same manner and published it in the year 1893.[1]

Though recovery from acute purulent inflammation of the middle ear when the attic and mastoid process are involved, occurs without opening of the mastoid, we must not wait for it too long, for at any time a grave or fatal complication may set in, as the subsequent part of this paper will demonstrate.

In the next case spontaneous recovery seemed likely, but a sudden aggravation made the operation necessary, which was followed by recovery, but might better have been done earlier.

CASE 2.—**Acute Purulent Otitis Media in an Anæmic Girl of Eighteen Years. Improvement under Antiphlogistic Treatment. Sudden Aggravation on the 23d Day of the Disease. Operation on the 24th. Discharged on the 34th for After-Treatment in the Dispensary. Recovery.**

Rosa Rain, a girl of eighteen years of age, was admitted to the hospital May 25, 1895. A week previously a severe coryza had set in and was accompanied by pain and tinnitus in the *right* ear. Three days later she noticed a discharge from the ear, which relieved the pain to some extent. The last two days she had pain

[1] See my paper on "Otitic Brain Disease," ARCH. OF OTOLOGY, vol. xxii., p. 149.

in the left ear also, with nightly exacerbations. The girl looks excessively anæmic, but her general health has been good.

Condition on Admission:

The *right* mastoid region slightly puffy, tender on pressure, principally in the antrum pit (the well-known shallow depression near the posterior-upper part of the orifice of the ear canal, also called Désarène's pit or post-meatal fossa). The reddened and swollen drumhead has a large perforation in its lower and anterior part, through which creamy, slightly offensive pus is escaping. $h = \frac{1}{2}\frac{2}{4}$; $v = \frac{1}{6}\frac{0}{0}$.

The *left* ear is tender on pressure in the antral pit only. The whole drumhead is red and the membrana Shrapnelli bulging. $h = \frac{c}{2\,4}$; $v = \frac{5}{6\,0}$.

The patient has normal temperature but complains of headache.

Patient was kept in bed. Her right ear was gently syringed, wiped out, and boric-acid powder blown in.

Leiter's coil was applied to the right mastoid constantly.

May 26th.—Shrapnell's membrane of left side less bulging. Drumhead becoming pale. Right ear, less pain. Discharge free. Headache diminished.

May 28th.—Tenderness on pressure in both antrum pits.

May 29th.—Tenderness on pressure in antrum pit of the right side, only on the tip of the left. Cold applications only at times.

May 30th.—Tenderness in right antrum pit only.

May 31st.—Right Shrapnell's membrane projecting in posterior part. Incised.

June 1st—Large opening in R, *Mt.* Discharge free. Antrum pit sensitive. Pressure on tip, particularly its medial surface painless. Cold applications, not being grateful, left off.

June 4th.—R, less swelling of upper part of *Mt.*

June 5th.—Patient feels tolerably well. R, pain over antrum and posterior border. Left ear almost well.

June 8th.—R, pressure painful only at post. border. Discharge increased.

June 11th.—R, more pain, especially over tip. Polypoid proliferation of mucous membrane hanging down from attic and pulsating. Temp. 99.6°, pulse 106. Optic discs congested.

June 12th.—Rise of temperature, 100.5°. Mastoid region puffy.

Operation.—Incision from tip to temporal line, close to insertion of auricle. Periosteum stripped off. Bone even, vascular. A

few blows with the chisel in the antrum pit discovered pus. On exposing the pus wherever found, the whole outer table of the mastoid had to be removed. The tip contained the greatest quantity of pus, the basal cells less, the antrum and middle cells least. The whole interior of the mastoid was filled with pus, granulations, and brittle bone, all of which was carefully scooped out until the dense white bony wall of the mastoid cavity was exposed on all sides, and carefully explored with a probe. No communication with the cranial cavity was found, nor with the digastric fossa, and pressing the upper part of the sterno-cleido-mastoid and digastric muscles between my fingers from below upward brought no pus into the wound. The probe passed readily from the antrum through its canal into the attic without giving the feel of rough bone. Enlarging of the antrum canal and any interference with the attic and tympanum were therefore omitted. Mastoid cavity filled with corrosive sublimate gauze.

June 13th.—Temp. normal, general condition improved, optic disc still slightly congested.

June 17th.—Patient steadily improving. Interior of eye normal.

June 28th—Patient discharged to be dressed in Dispensary.

Aug. 15th.—The wound closed in six weeks. The otorrhœa diminished rapidly and disappeared. Hearing improved gradually.

Aug. 28th.—No discomfort. Drumhead restored. Hearing normal, namely $h = \frac{24}{24}$; $v = \frac{20}{20}$, as in the other ear.

The remarkable feature in this case was that for twenty-two days there was the ordinary course of a purulent otitis media. That the mastoid was involved, was plain, but in no way more pronouncedly than in Case 1, which ended in recovery, whereas Case 2 showed, on the 23d day of the disease, a sudden rise of temperature and pulse, and puffiness of the skin of the mastoid region, after the sensitiveness of the antral region had diminished. On the part of the tympanic cavity the exacerbation was not signalled by a stoppage of the discharge, but by protrusion of granulation tissue from the posterior attic region. The mastoid, as the operation demonstrated, must have been intensely affected from the beginning, and only the width of the antral canal, affording sufficient drainage into the middle ear, warded off the danger so long.

From the symptoms it is clear that the mastoid complica-

tion, as is natural, began in the antrum, and, while diminishing in it, grew more active below and above it.

The same course showed very plainly in

CASE 3.—**Acute Purulent Otitis Media Having a Mild Course for Two Months; Sudden Swelling of Upper Mastoid and Supra-Auricular Region, with Cerebral Symptoms; Opening of Mastoid; Pus in Tip; Rapid Recovery.**

Ed. B. Lohr, aged thirty-three, a strong and healthy-looking workingman, was admitted to the hospital April 19, 1895. Two months previously acute otitis began in the right ear and was soon followed by discharge, which continued without causing much trouble until four days before admission. Then the mastoid began to swell, was tender on pressure, caused *severe headache*, and, the day before admission, *vomiting*.

When he presented himself at the clinic there were considerable redness and swelling, reaching from about an inch behind the ear canal an inch or more above the the auricle, as far as the temporal fossa. The region of the antrum and the tip of the process looked normal and were painless, whereas the swollen part was painful both spontaneously and on pressure. The ear discharged inoffensive pus; the posterior-upper end of the wall of the canal was moderately swollen.

The patient was operated on the same day. Incision as usual from tip to above the auricle into the reddened swollen integument. The bone appeared healthy. The opening was begun in the post-meatal pit, and extended into the antrum. There was but little pus in the antrum and none in the cells above it, nor was there a fistula or anything abnormal in the bony part underlying the swollen region, except congestion. The cells below the antrum down to the tip, however, were filled with pus. The whole pus cavity was carefully cleansed, and, as its inner wall appeared healthy without a sign of communication with the digastric or the posterior cranial fossa, and a bent probe could easily be passed into the aditus ad antrum without detection of rough bone, I carried the operation no farther, tamponed the cavity, and put the patient to bed.

Two days later the dressing was changed. No pus. The postero-supra-auricular swelling diminished.

Convalescence uninterrupted. Discharged April 27th, eight days after the operation. Last seen in July, 1895. Membr. tymp. and hearing normal. Perfect recovery.

This case is simple but instructive. We may assume that the suppuration extended from the tympanum into the antrum, there exhausted itself, proceeded into the tip, and when it had exhausted itself there also, suddenly started in the base of the mastoid with the usual meningeal symptoms—headache and vomiting. Now the inflammation was cut short and the disease quickly brought to a favorable end by the prompt operation.

The fourth case, the last of this small series, ended in death, which, I think, might have been prevented if it had been possible for me to attend to the patient uninterruptedly.

CASE 4.—**A Healthy Man, of Forty-four Years, had an Acute Purulent Otitis Media, after the Grippe; under Treatment with Paracentesis and Topical Remedies Rapid Improvement so that he Resumed his Business (Piano Teaching); Relapse of Otitis with Severe Cerebral Symptoms; No Operation; Death. Autopsy: Suppuration of Mastoid, Perforation into Posterior Cranial and Digastric Fossæ; Meningitis.**

Mr. Aug. St., æt. forty-four, a man of healthy constitution, consulted me January 19, 1895, shortly after he had had the grippe. For the last week he had complained of pain and hardness of hearing in the left ear. I found the drumhead red; the posterior part bulging. This I incised at once. The pain was relieved and free discharge set in. Two days later, I found him comfortable, the membrana tympani, after removing the discharge, flat and pale, the incision still open. I ordered mild syringing with warm boric-acid solution, wiping the canal with absorbent cotton, and dusting impalpable boric-acid powder in it. He came to see me twice more, rapidly improving. He resumed his business of piano teaching.

In the middle of February his wife wrote me that his ear was worse again, and he felt so badly that he could not go to me, and asking whether I would come to the house. As this at the time was impossible to me, the patient living at a considerable dis-

tance, he was treated by his family physician, whom I met in consultation February 28th. He told me that the patient, two weeks previously, had had great pain in the ear and head, became unconscious for four days, then dragged his right leg, let things held with his right hand fall, and could not speak. For the last week he had been better. I found the patient up, walking about, quite rational. There was discharge from the left ear, the posterior wall of the ear canal was bulging, the mastoid normal-looking, no tenderness on pressure anywhere, the tip and its surroundings revealed no abnormity either to the sight or to the touch. His head was free, no optic neuritis, no weakness of limbs, speaks well and names objects promptly and correctly. He has had similar cerebral attacks, with convulsions, before he had his ear trouble, and his father had suffered from the same. His younger brother was a drunkard and died a few years ago, and our patient also indulged freely.

The symptoms distinctly showed a serious and extended affection of the left side of the brain. Considering the existence of purulent otitis, the most natural inference was that the suppuration has extended from the ear into the cranial cavity. Extradural or cerebral abscess was the diagnosis of probability, and only the present intermission and the family history made me refrain from the proposition of an immediate operation, but I told his physician that the operation should be done as soon as there was the least aggravation of the symptoms.

The second night there was a sudden, rapidly growing relapse of the brain affection, and the patient died in twenty-four hours.

The **autopsy** was made in the afternoon of the same day by myself, assisted by two of my hospital associates, and the family physician. It revealed extensive purulent meningitis, both of the base and convexity. In the left middle and posterior cranial fossæ there was a considerable extradural collection of pus which communicated, through a large opening in the posterior wall of the petrous bone, with the mastoid cavity and the digastric fossa. There was no sinus-thrombosis, but the wall of the sigmoid sulcus was blackish. The whole temporal bone was removed, to be examined in the laboratory. While removing it we

noticed that a considerable portion of the extradural collection of pus had penetrated through an opening, of over 1 *cm* in diameter, in the inferior-medial surface of the mastoid process into the digastric fossa. Another opening of about 3 *mm* was found lower down near the apex of the medial surface of the tip of the mastoid process. This (Bezold) opening led into the cavity of the mastoid, and must have contributed to the accumulation of pus in the digastric fossa.

The outer table of the mastoid was hard and healthy, about 3 *mm* in thickness; the inner table was corroded and largely perforated. The interior of the mastoid was converted into a large pus cavity, which communicated with the posterior cranial and the digastric fossæ. The collection of pus in the digastric fossa, though quite considerable, did not, *intra vitam*, manifest itself by any symptom, nor was it, *post mortem*, noticed before the skull was opened. It lay surrounded by the perforated bones and the adjacent muscles, not burrowing down the neck. The pneumatic spaces over the mastoid and tympanum, at the base of the petrous pyramid, were large and also filled with pus.

The history of this case, completed by the autopsy, furnishes material for some important considerations.

First.—The *family history, though important in general, may lead to grave errors of judgment in special cases.* The course and termination of the affection do not require for their explanation the family history of cerebral attacks which deeply impressed the mind of the family physician. The first cerebral attack can be perfectly accounted for by the extradural abscess and the meningitis resulting from it.

Secondly.—The remarkable and so complete intermission, during which I saw the patient, was in all probability produced by the perforation at the roof of the digastric groove furnishing an outlet for the pus from the posterior and middle cranial fossæ. The pus being there confined, and the evacuation and drainage of the extradural abscess insufficient, the relief was temporary, the meningitis was only interrupted, not stopped, and its return caused the lethal exit.

Thirdly.—This observation very forcibly shows that an otitic meningitis, even when once fairly started, is not absolutely a fatal disease. The temporary, complete relief might have been permanent, if the liberation of the pus had been made thorough by an operation. The case is a confirmation of the opinion and experience of W. MACEWEN, who bases his statement on six successful cases where the symptoms warranted the diagnosis of purulent meningitis.[1]

Conclusions.

If I may draw some conclusions from the preceding observations, they may be as follows:

1. *There is in acute otitis media*, as H. Schwartze states, *no symptom which by itself constitutes a sufficient indication for a mastoid operation.* The most important symptoms are: local pain, spontaneous and on pressure; headache, rise or fall of temperature, dizziness, nausea, vomiting, stupor, aphasia, hemianopsia, optic neuritis, paralysis, coma. Neither is there any one symptom that in any case contra-indicates it, with the exception, perhaps, of deep coma.

If Schwartze says (*Handbuch*, vol. ii., p. 796), "In presence of pronounced choked disc, the prognosis of the operation always seems to be lethal," I beg to take issue with him, for I know from personal experience, which coincides with a statement made by Dr. C. J. Kipp, of Newark, N. J., many years ago, that choked disc from otitic brain disease may disappear with either operative or spontaneous recovery of the patient, say, for instance, in pyæmia from sinus thrombosis.[2] As to coma, there are a number of cases on record[3] where the operation was followed by recovery, and Schwartze himself has lately published[4] one of the most brilliant instances in which a patient was brought unconscious to the hospital, but made a perfect recovery from an operation for otitic

[1] See his fundamental and exhaustive work, *Pyogenic Infective Disease of the Brain and Spinal Cord*, 1893, p. 100, Case xviii., and p. 329.

[2] H. Knapp, "Ear Disease with Brain Symptoms," *Trans. Am. Otological Society*, vol. v., part 3, 1893, Case ii., p. 405.

[3] See Broca and Lubet-Barbon, *Les Suppurations de l'Apophyse Mastoïde*, Steinheil, Paris, 1895, pp. 29–31, Observation ii.

[4] *Arch. f. Ohrhk.*, Bd. xxxviii., p. 283.

abscess in the temporal lobe. That this may be possible also in acute cases may be fairly deduced from our Case 4, in which a complete intermission after a four days' unconsciousness and other cerebral symptoms is explained by the autopsy (see above). The case of Broca and Lubet-Barbon was acute, in a child of seven years.

2. *The indication for operating is derived from the ensemble of the symptoms and the course of the disease.*

In our Case 1, attic disease with mastoid involvement, the opening of the mastoid had been justifiable, and I was prepared for it every day, but, as I could watch the patient closely, I tried non-operative treatment, under which he steadily improved, and finally recovered completely. In Case 2, the course during the first three weeks afforded hope for a spontaneous recovery, then a sudden rise of temperature, swelling of the mastoid, and congestion of the optic discs appeared as danger signals which urged an immediate operation.

3. *Even if the patient does well, and seems cured, we should, for weeks and months, not lose sight of him, for acute purulent mastoiditis is a treacherous disease.* The antral part may be cured, but weeks and months later foci of suppuration may develop in the basal or apical part of the mastoid and in the cranial cavity that require immediate operation. This rule is supported by Case 3 and Case 4. I could add another case, recently operated on. The patient was apparently cured by the Leiter coil, etc., but a few weeks later returned with temperature 101°, glandular swelling in the parotid region, and facial paralysis. He had an extensive operation performed and is doing well.

4. *Whatever the symptoms be, we should, as a rule, begin the operation by opening the antrum, and then be guided by the conditions coming into view.* Our Case 3 showed the suppurative process terminated in the antrum and apex, but beginning at the base. Evacuation of the pus already formed and free drainage, aborted the inflammation in the basal part. If in Case 4 I had seen the patient during the fatal aggravation, an opening of the mastoid would surely have led me

into the cranial cavity, and by evacuation of the epidural abscess and drainage the patient's life might have been saved.

If in this article I have described only one case of spontaneously recovered acute middle-ear suppuration, and three which required operation, it does not, of course, follow that the majority of acute middle-ear suppurations with mastoid involvement require a mastoid operation. On the relative frequency of spontaneous recovery there is a very valuable statement by Bezold who, for years, has analyzed and described his clinical material with rare completeness and accuracy. In his exceedingly instructive monograph *Periscope of the Present Status of Otology according to the Results of my Twenty-four Years' Statistical Observations*, p. 104, he says: "During the years 1887–1892, in 701 cases of acute purulent otitis media, 62 operations were made, namely, 5 Wilde's incisions and 57 Schwartze's openings of the mastoid. From this experience it follows that about 9 per cent. of all cases of acute middle-ear suppuration are complicated with such a degree of mastoid inflammation as to make a spontaneous recovery improbable."

In view of the large series of operations that have been published of late, I feel like apologizing for reporting four cases only, yet even a small number of cases, if they well illustrate conditions useful to know and not yet generally appreciated, are worth publishing, for in the mastoid operation, which in otology has the importance of the cataract operation in ophthalmology, the smallest details should be considered and discussed from all sides.

SOME TUMORS OF THE EAR.

By A. SCHEIBE in Munich.[1]

(*With Plate VIII., Volume XXV., German Edition, 1893.*)

Translated by H. Knapp.

THE following tumors seem worthy of publication on account of their rarity.

I.—Fibroma at the Entrance of the Ear Canal.

April 13, 1886, a man fifty-six years of age, came to the clinic, having noticed a growing tumor in his left ear for six years. On examination a club-shaped, rather hard tumor, the size of a small walnut, covered by cutis, partially supplied with hair and glands, and ulcerated at a small place, was found. Removed with the galvano-cautery snare. No relapse these seven years.

Histological examination.—The bulk of the neoplasm consists of thick undulating bundles of connective tissue with spindle-shaped or oval nuclei and many blood-vessels. The surface of the tumor is formed by from five to fifteen layers of epithelium, covered with epidermis. All the constituent parts of the skin occurring on the medial surface of the tragus are represented, with the exception of sweat glands. Small crypts, with a well developed rete Malpighi and papillæ penetrate from the surface to the centre of the tumor. Moreover, it contains hair and very many sebaceous glands.

The tumor, therefore, presents a fibroma of the subepithe-

[1] From the Anatomo-pathol. Inst. of Munich.

lial connective tissue with proliferation of sebaceous glands. Fibromas of the auricle and the entrance of the meatus, apart from those situated in the lobule, are very rare. Klingel[1] calls them adenoma sebaceum fibrosum. Kuhn,[2] on account of their warty appearance, classifies them among the papillomata, to which, however, our tumor could not be counted, because the surface was smooth and the papillary body represented only by a few crypts.

II.—Pedunculated Osteo-Sarcoma of the Ear Canal.

(From the private practice of Prof. BEZOLD.)

(*With Figs. I. and II. of Plate VIII.*)

E. v. H., seventeen years old, healthy-looking, called May 31, 1889. In the left ear impairment of hearing for a week; moderate, somewhat offensive discharge for four days; no pain. The osseous meatus is filled with a hardish tumor of irregular, red and white, excoriated surface, over the superior and posterior parts of which a probe can be passed, whereas at the anterior wall of the meatus the tumor appears to be connected with the bone. Politzer's experiment elicits no perforation whistle. $v = \frac{5}{60}$ *cm.* F a′ distinctly heard by A. C.; from the vertex it is heard in the diseased ear.

June 1st, thick fibrinous coat on excoriated surface of the new growth, after the removal of which, June 4th, a deep red, shining, somewhat lobulated surface comes to view. The tumor was removed with a snare. It was oval, the size of a bean, having been attached with a small root to the anterior superior wall of the meatus. *Mt*, the remainder of the meatus, and *v* now normal.

October 5th, at the place of the wound there was a small irregular prominence covered with unchanged cutis of the meatus.

The decalcified tumor is divided by one longitudinal incision passing through the pedicle. One half is then cut into longitudinal, the other into vertical sections. The growth is a combination tumor, its bulk sarcoma tissue pervaded with osseous trabecles extending from the pedicle to about its centre. The sarcomatous portion is rich in cells,

[1] *Zeitsch. f. Ohr.*, vol. xxi., p. 189.
[2] Schwartze's *Handbuch der Ohrenheilk.*, Bd. ii., S. 575.

which mostly are spindle-shaped, with large nuclei. Here and there giant-cells are noticed. The arrangement of the cells are partially irregular, partially fascicular. The intercellular substance, except in the central portion, is scant. The vessels are rather scarce and thin-walled. The superficial strata of the pseudo-plasm are to a large extent infiltrated with small cells. The pedicle of the tumor consists of well developed bone, from which many spiculæ radiate through the tumor. Numerous osteophasts, some of which, situated in Howship's lacunæ, prove that, simultaneously with the growth, also processes of absorption are going on. A thick epidermic stratum covers the tumor.

Osteo-sarcoma of the ear canal, of which the specimen under consideration is a well marked example, is very rare. A few instances of this variety originated in the middle ear, and terminated fatally by diffuse extension. As originating in the meatus there is only a single case on record, described by Dr. A. H. Buck,[1] from the practice of Dr. Roosa. The patient was a girl of fifteen years. There has been no relapse in either case. This tallies with the experiences of general surgeons who ascribe to the osteo-sarcoma an essentially better prognosis than to the pure sarcoma.

Explanation of the Figures.

Fig. I. (very slight enlargement).

Osteo-sarcoma. Longitudinal section through the centre of the tumor and its pedicle.

S = Osseous pedicle.
B = Trabecles of bone with osteoplasts.
Sa = Sarcoma tissue.
E = Epidermis.
F = Small-celled infiltrations.

Fig. II. (slight enlargement).

Osteo-sarcoma. Half of a transverse section through the pedicle.

K = Bone.
M = Medullary cavity.
E = Epidermis.
B = Connective tissue and periosteum.

[1] *Diagnosis and Practice of Ear Diseases*, p. 120, New York.

III.—Three Cases of Hairy Granulation Tumor in the Middle Ear.

(*With Fig. III. on Plate VIII.*)

Sept. 29, 1890.—S. Sp., priest, forty-one years, has suffered since childhood from left-sided otorrhœa, for many years lately only off and on. Five times a tumor was removed from the ear, the last three years ago. The ear has been dry since. Four weeks ago sensation of tension for which patient instilled almond oil. Discharge since.

Examination.—After the removal of pus and epidermic masses a pedunculated, soft, uneven tumor, the size of a small bean, is seen to fill the inner portion of the meatus. The pedicle seems to be in the antrum canal. I expected to have to deal with an ordinary polypus, but when the tumor was removed with the snare I was surprised that its surface was studded with a regular set of rather stout hairs. *Mt* and ossicles absent. A portion of the posterior wall of the osseous canal is likewise destroyed. The whole cavity of the middle ear as far as visible is lined with horny epidermis. Absolute deafness. Other ear in appearance and function normal.

Histological examination.—The basis-substance is granulation tissue, chiefly composed of small round cells, regularly disseminated through tumor, only here and there heaped in clusters. In the central portions there are thicker connective-tissue fascicles; the intercellular substance is scant at the periphery, the surface is made up in part of ganulation and regular fat tissue, in part of horny epithelial scales without a trace of the other constituents of the epidermis (stratum lucidum and mucosum). The scales are irregularly arranged, forming smaller and larger lamellæ, and penetrating also into the depth of the granulation tissue.

The hairs can be followed deep into the interior of the tumor. The hair follicles are surrounded by non-nucleated larger cells, granulation tissue, and here and there a few giant cells which seem to replace the hair follicles. Besides the hairs, numerous glandular formations, containing large giant-cells, are seen, especially in the centre of the tumor. A part of these formations are evidently degenerated sebaceous glands, the ducts of which can in some places be followed to

the surface. We easily discover that some of the giant-cells are beset with prickles and reefs, characterizing themselves as follicles which have shed their hairs. Some connective-tissue fascicles and vessels show hyalin degeneration. A number of these vessels seem to contain no blood, but granular, yellow detritus; others are obliterated through endothelial proliferation.

That the hairs have not penetrated into the tumor from without, but have developed in it, is proved by the presence of hair follicles; further, by the fact that the patient reappeared three years later with another hairy tumor.

March 23, 1893.—After the discharge had stopped by itself, since the tumor was removed three years previously, it has returned and been offensive in the last ten weeks. A reddish-gray, uneven, easily bleeding, soft tumor, the size of a pea, occupies the inner portion of the osseous meatus. When removed it was again found provided with hairs. It was inserted into the lower part of the epidermoidally degenerated tympanic cavity. At the next examination, six days later, the latter was found completely dry. No trace of a root.

Only two similar cases are on record. Kuhn[1] saw, in a case of acute purulent otitis media, a tumor start from the innermost portion of the lower wall of the meatus, which on histological examination revealed the structure of ordinary granulation tissue, supplied with numerous hairs without follicles. He supposed that the hairs had penetrated into the tumor from without. The other case is described by Weydener.[2] To my great surprise I found that the hairy tumor of Weydener was taken from the same priest who furnished my own specimen. The neoplasm examined by Weydener was removed nine years ago, evidently having a great tendency to relapses. Weydener's description tallies with mine almost to the letter. Our case of a hairy tumor in the middle ear is thus far the only one known. Accidentally, however, I found a second case while examining old specimens of aural polypi. Its history, according to the

[1] *Transactions of the 58th Meeting of German Naturalists and Physicians*, at Strassburg, 1885, p. 509.

[2] These ARCH., vol. xiv.

journal of the Aural Policlinic in the Munich Hospital, is as follows:

May 31, 1887.—J. Ringseisen, student, twenty-four years old. In his eighth year earache without discharge for a short time, in his fourteenth year discharge lasting a year, intermittent since. Absence of *Mt* and malleus handle. The whole medial wall of the tympanic cavity, coated with thick, white epidermis. At the inner edge of the osseous canal a probe can be introduced several *mm* upward ; hearing defective ; other ear normal.

July 5, 1889.—The syringe expels a piece of snow-white cholesteatoma, the size of half a bean. A pale-red polypus of the same size is snared off. The whole tympanum is coated with thick epidermis, only in the centre there is a small granulation. A shred of epidermis hangs out of the antrum canal.

June 1, 1890.—For some time stupor and dizziness. During the time of his military service a larger quantity of epidermis had collected, after the removal of which no trace of a tumor was visible.

At the *histological examination* the tumor removed July 5, 1889, resembled so much the one above described that I may confine myself to note in what it differed from the other. The tumor evidently is of recent date and contains less connective tissue, sebaceous glands, hair follicles, and glands. Stout hairs are entirely absent. Some heaps of pigment resulting from former hemorrhages are to be mentioned.

In both cases the tumor was not congenital but grew on the soil of a cholesteatoma ; this, however, does not explain the development of the hairs. It seems of no use to enter into any speculation about the pathogenesis of such cases before a greater number of them have been observed.

Explanation of the Figure.

Fig. III. (slight enlargement).

Part of a section through the hairy granulation tumor.

H^1 = hairs.
H^2 = hair follicle.
R = giant-cells.
T = sebaceous glands.
H^3 = horny cells (collection of scales.)
F = fat tissue at the surface.

ANOMALIES OF FORMATION OF THE MEMBRANOUS LABYRINTH IN DEAF-MUTISM.[1]

By Dr. A. SCHEIBE, Munich.

Translated by Dr. C. Zimmermann, Milwaukee, Wis.

FOUR years ago I reported the anatomical examination of a case of deaf-mutism (these ARCHIVES, English, xxi., p. 12, Germ. Edition, xxii., Nos. 1 and 2). It showed atrophy of the posterior branch of the auditory nerve (nervus cochleæ, sacculi, and ampullæ inferioris) and peculiar changes of the membranous portion of cochlea and sacculus of both ears, which were due to malformations. The osseous labyrinth was normally developed. It was a unique case, although such conditions might have been found in quite a proportion of former autopsies, if they had been examined histologically. This would explain a number of post-mortems, with negative results in regard to the petrous bone, since not all cases are of cerebral origin.

In the last year Prof. Bezold kindly gave me the opportunity to examine two cases of deaf-mutism *post mortem*, in which I found almost the same condition in both ears as before.[2] By this repetition the condition gains in value.

Michael J., aged eleven years, died with symptoms of suffocation December 12, 1893, after being sick for six weeks with scarlet-diphtheria and hydrops. He was a pupil of the Institute for Deaf-Mutes, moderately talented, very excitable. Speech not

[1] From the Histological Institute at Munich.

[2] The case was demonstrated at last year's meeting of German naturalists and physicians at Vienna and illustrated by histological sections and drawings.

good. According to official medical testimonials he was born deaf. Both his brothers hear.

Autopsy of the head the day after death. The pia of the whole convexity shows marked whitish opacities and, when passing over the sulci, becomes more or less opaque. At the base the opacity gradually disappears. No changes around the root fibres of the vii. and viii. nerves at the medulla oblongata. The brain in general appears quite anæmic, but the veins of the occipital lobes are fuller than usual. Both hemispheres equally formed. The dura at the pyramids normal. The auditory nerves apparently not attenuated.

The right petrous bone was removed by a wedge-shaped cut and the cartilaginous portion of the Eustachian tube was severed at its lower extremity. The section appears normal, its lumen empty. The naso-pharynx contains exuberant adenoid vegetations, pending like large lobes. Oral breathing was frequently observed during lifetime though it was not constant. The left middle ear with *Mt* and petrous portion was chiselled out.

Left petrous bone: The external surface of *Mt* shows a very marked posterior fold. Shrapnell's membrane is very much retracted and as well as the posterior portion of *Mt* transparent with a reddish hue. After removal of the tegmen tympani and antri the mucous membrane of the aditus and antrum appears very hyperæmic, but moderately swollen. A central band especially is somewhat succulent and reddish-gray, which, coursing through the antrum, sends threads in all directions. The posterior portion and the floor of the tympanic cavity are covered by transparent, partly bloody mucus. The mucous membrane of the tympanic cavity is less reddened, and at the osseous portion of the tube it appears normal. *Mt* not essentially thickened. The capitulum of the stapes shows normal mobility, when touched with the probe.

Right petrous bone: Dura, aqueducts, and porus acusticus internus normal. A posterior fold can be traced at the external surface of *Mt.* The posterior inferior quadrant of *Mt* of yellow tint.

After removal of the tegmen tympani: Tympanic cavity, aditus, and antrum filled with thick viscid pus, which contains a small streak of blood at one place. The mucous membrane of the tympanic cavity, aditus, and antrum is rather thickened, grayish-red, succulent, and slightly granulating. Hammer and anvil are com-

pletely imbedded in the succulent mucous membrane. The mucous coat of *Mt* is not much thickened, but shows some radiating vessels. The mucous membrane of the osseous portion of the tube is devoid of swelling and injection. The mucous membrane at the promontorium is thickened and granulating. It fills the niche of the round window and envelops the capitulum of the stapes, which shows normal mobility.

A section of the pars mastoidea, cut by the saw, presents somewhat hyperæmic spongy substance without pneumatic cells.

Thus both middle ears were in a state of recent inflammation, as is the rule in autopsies after scarlet fever, according to our experience. For the examination of the labyrinth the petrous bones (which I received from Prof. Bezold) were hardened in Mueller's fluid and alcohol, decalcified by nitric acid, five per cent., and cut in sections after the usual further manipulations.

The histological examination of the middle ear revealed numerous glandular formations, lined with flat epithelium, in the mucous membrane of the tube up to the antrum, the openings of which on the surface can be seen in many sections. They contain a clear, partly fibrillar mass with a few star-shaped cells. The tensor tympani muscle exhibited a hyperplasia and partial degeneration in the middle ear, independent of the inflammation, similar to the condition in the former case of deaf-mutism.

Histological examination of the labyrinth: The auditory nerve, which, outside the temporal bone, appeared to be normal, shows atrophic changes in the labyrinth, limited to a portion of the posterior branch, the cochlear branch, principally in the first whorl. In the second whorl the lamina spiralis ossea is almost completely occupied by the nerve fibres, in the third whorl entirely. Therefore the nerve fibres can be stained almost normally through Weigert's method only in the latter, scarcely at all in the basal whorl, in which there are very few left. The ganglion spirale only of the first whorl is atrophic. No defects in Rosenthal's canal as in the former case.

There is only a trace of Corti's organ in the larger part of the basal whorl; in the upper whorls it is lower than normal, but of normal shape.

The changes of *Corti's membrane* and the *stria vascularis* are chiefly of interest. (For better information the drawings of the first case may be compared. These ARCHIVES, xxi., plate I. of vol. xxii., Germ. Ed.) Corti's membrane shows normal structure only

on some small places (in both ears), but even there does not reach its normal size. In the whole remaining portion of the cochlea the membrane, otherwise lacking a sheath, is surrounded by a nucleated covering and is rolled up as rudiment in the internal sulcus spiralis or partly on Huschke's auditory teeth, without any insertion.

The stria vascularis throughout the cochlea is in an abnormal condition. In sections it is hypertrophic and projects like a knob or blister into the lumen of the ductus cochlearis. The vesicular elevation of the stria consists of an array of low cells, at least at its summit, just like the covering of Corti's membrane. It can be observed in several sections how the sheath is detached from Corti's membrane and how it converges towards that of the stria, finally becoming united with it. Thus a bridge is formed of the two nucleated membranes, the sulcus spiralis internus, and the ligamentum spirale, between the two laminæ of which the rolled-up rudiment of Corti's membrane is situated, diverging more or less from the sulcus spiralis internus towards the spiral ligament. This abnormal formation of a bridge may be observed at different places in the cochlea in like manner.

Reissner's membrane is depressed towards the ductus cochlearis and the bridge mentioned above, and partly touches its contents closely, as if it were adherent. The spiral ligament is not essentially altered.

Vestibulum, semicircular canals, and both aqueducts are normally developed. Only a few hyaline and colloid globules in the neuro-epithelium were found.

Inflammatory symptoms or products of former inflammation are nowhere to be found in the labyrinth.

If we compare the conditions of the former case, described four years ago, and the present, we find in both a hyperplasia of the tensor tympani muscle in the middle ear, and in the labyrinth atrophy of the auditory nerve, malformation or degeneration of Corti's organ, peculiar changes of Corti's membrane and stria vascularis, which, according to their nature, are to be explained as anomalies of formation. The occurrence of these anomalies in two deaf-mutes in the same manner is in favor of an arrest of development, as well as their being binaural. In the first case a sheath, containing cells, replaces in the sacculus the membrane of otoliths,

which normally contains no cells. This sheath is sessile at the macula acustica like a fungus, and encloses numerous well preserved otoliths in spots of decalcination. This membrane is also to be ascribed to an anomalous development. Otherwise the two cases differ only in the different extent of the atrophy of the nerves. In the first case the nerves of the cochlea, the sacculus, and inferior ampulla (ramus posterior of Retzius) are atrophic, *i. e.*, those which are related to each other embryologically, in the last case only the cochlear nerve.

Therefore we have congenital deaf-mutism in both cases.

The autopsy did not reveal any other disturbances of development, unless the cysts in the frontal lobes of the first deaf-mute are to be taken as congenital.

How does our explanation of the conditions above described by the assumption of an arrest of development correspond to the facts of embryology? According to Koelliker the sulcus spiralis internus at a certain time of embryonic life is completely filled with very high epithelium. Corti's membrane develops from a cuticular secretion on its surface and on the crista spiralis. The stria vascularis is known to bulge as a prominence into the ductus cochlearis of the embryo. But a connection is not observed of the stria vascularis with the region of the sulcus spiralis internus, or a formation of Corti's membrane from the stria. The condition set forth above has become typical by its repetition in four organs of hearing, and calls for special attention in embryological studies.

In all cases heretofore published the malformation of the labyrinth involved the osseous capsule. Our case shows that an arrest of development may be confined to the membranous labyrinth, the osseous portion being normally formed.

A HISTOLOGICAL CONTRIBUTION TO DEAF-MUTISM DUE TO OTITIS INTERNA.[1]

By A. SCHEIBE, Munich.

Translated by Dr. C. Zimmermann, Milwaukee, Wis.

The pupil, Beck, of the Institute for Deaf-Mutes at Munich, eight and a half years old, died from scarlet fever with diphtheria November 17, 1893.

Beck *became deaf in his fourth year from a brain disease*, according to the statement of his parents and to an official medical certificate, as Mr. Voller, superintendent of the institute, kindly informed me. Beck was very talented, his speech normally developed. No heredity. His four sisters and brothers hear well.

Post mortem the day after death. Small hemorrhages in the subcutaneous tissue of the forehead. The blood-vessels of the meninges, especially in the posterior portions, are engorged.

Dura mater at petrous bone, porus acusticus, and sinus transversus normal, as well as the curvature and external surface of *Mt.* Translucent redness of the upper portion and along the hammer of left *Mt.*

Right ear: Tympanic cavity, aditus, and antrum empty; mucous membrane normal without any injection to speak of. Some delicate mucous folds in antrum and tympanic cavity. Capitulum of stapes movable by pressure on its crura by the probe. The reflexes at the base of the stapes change accordingly.

Left ear: Bloody serum and a small blood coagulum, which can be washed off, at the bottom of the tympanic cavity. The latter and antrum show recent pretty intense injection of several vascular ramifications. The injection extends to the osseous

[1] From the Pathological Institute at Munich.

tube and is greatest at the isthmus, where the mucous membrane is succulent. The cartilaginous portion of the tube is free from injection and swelling. Mucous membrane of the tympanic cavity shows slight swelling, that of the antrum none at all. Both mastoids are the greatest part cancellous, in both numerous cells.

For the examination of the labyrinth the temporal bones, kindly given to me by Professor Bezold, were hardened, decalcified, and cut in serial sections. The histological examination shows the mucous membrane of the *right middle ear* moderately infiltrated with small cells and injected by distended blood-vessels, principally in the osseous portion of the tube, at the bottom of the tympanic cavity and the promontorium. Traces of secretion, consisting for the greatest part of cast-off epithelia, are in the cells below the osseous tube and at the floor of the tympanic cavity.

Windows and intrinsic muscles normal. The mucous layer of *Mt* contains a few acinous glands near its anterior periphery in the region of the tubal orifice.

Left ear shows a similar condition, except the glands in *Mt.* The vessels exhibit recent and old changes, *viz.:* obliteration of several arteries, partial obliteration of the artery of the seventh nerve by connective tissue, and a peculiar alteration of the periosteum at the promontorium and the underlying osseous capsule of the labyrinth. The deeper portion of the latter is normal, as shown by the more intense staining through hematoxyline. There is a small circumscribed osseous hyperplasia at the promontorium, just below the oval window, where the periosteal layer of the mucous membrane is thickened three- or six-fold by augmentation of its fibres. The innermost stratum of the periosteum contains very many cells with one nucleus, similar to those of the osteoid tissue. Therefore the border has become indistinct between the bone (the surface of which is formed of osteoid tissue) and the periosteum on account of its partially granular structure. The surface of the bone is rough. The greatest portion of the changed bone is perforated by large irregular medullary cavities, which originated in the Haversian canals, as may be inferred from the round shape of the smaller ones. The marrow consists chiefly of mononuclear cells. In the lacunæ are found a few giant-cells and long thin needles, which are also seen in the strata of the mucous membrane. The bone-trabeculæ between the cavities and the bone surface, towards the tympanic cavity, partially consist of

osteoid substance. Towards the labyrinth the cavities are bordered by normal bone.

The examination of the *labyrinth* reveals very conspicuous changes, which, unlike the ones in the middle ear, explain sufficiently the deaf-mutism. Remnants of inflammation in cochlea, vestibulum, and semicircular canals. The osseous labyrinth is intact almost everywhere. The membranous portions have been abolished and the lumen of the labyrinth is quite extensively filled with new-formed tissue and osseous substance. The new formation of tissue has taken place pre-eminently in the semicircular canals, less in the cochlea, in the vestibulum least.

Right ear: Cochlea: The greatest changes are in the basal whorl, especially in its vestibular portion. They gradually decrease towards the apex. The most conspicuous feature is the new formation of bone and connective tissue. The scala tympani contains much more of it than the scala vestibuli. The devastations, caused by the inflammation, are not so striking as the new formation of tissue, but they involve the most important structure, the ductus cochlearis. The lamina ossea and the septa between the convolutions remained intact.

Reissner's and Corti's membranes are wanting throughout the cochlea. Through the deficiciency of the former the ductus cochlearis and the scala vestibuli are united into one cavity. Corti's organ may be traced only in the first whorl, in the two upper whorls it retained its form, at least on some points the columns may be detected. The lamina membranacea withstood the inflammation in the greatest part of the cochlea. There is only one portion of it replaced by compact connective tissue (scar) at the commencement of the first whorl. In the latter part of the second and third whorls the lamina spiralis is torn off from the ligamentum spirale and adherent to the periosteum of the scala tympani at about a right angle. The ligamentum spirale is partly atrophic or defective in the apex of the cochlea, the stria vascularis comparatively well preserved.

New formation of tissue took place principally in the scala tympani and most exuberantly at the commencement of the cochlea. *The scala tympani is filled with compact osseous mass directly behind the membrane of the round window.* This is almost total, so that the lamina ossea has partially united with it, the secondary *Mt* totally. *Thus a complete fixation of the membrane of the round window has been the result of otitis interna only.*

The orifice of the aquæductus cochleæ is likewise closed by the osseous mass. Only a lattice work of the osseous trabeculæ and loose reticular connective tissue is seen in the rolled-up portion of the first whorl. The trabeculæ become less numerous in the farther course of the cochlea, and are replaced by reticular connective tissue, which entirely fills the lumen of the scala tympani, leaving free a few larger lacunæ. The meshes of the larger lacunæ of the connective tissue contain in diverse places peculiar large roundish cells arranged in chains, with pale, finely granulated contents. The nucleus is parietal and generally flattened. They are perhaps Steinbrügge's ring-cells, also seen by Schwalbach in otitis interna.

In the scala vestibuli the new formation of connective tissue, which is sclerotic and more compact, is confined to the modiolus, and the greatest part of the lumen is left free; new-formed bone only at the commencement of the cochlea. The periosteum at the intact portions of the lumen is not much changed.

The auditory nerve shows considerable changes. Nerve-fibres enter the cochlea quite numerously, but they become scattered in the terminal expansion of the lamina ossea and can hardly be stained by Weigert's method, and not at all in the inferior whorl. The lacking fibres are supplanted by connective tissue that is denser at the commencement of the first whorl and seems to be partially ossified.

The ganglion spirale is quite well preserved in comparison with the nerves. It is normal in the upper whorls and only in the lower one it is atrophic. Here the ganglion cells are either wanting, or the protoplasm of the remaining ones is more granulated or the staining of the nuclei is imperfect.

The vascular and lymphatic spaces of the modiolus are unaltered, save a slight hyperplasia of connective tissue.

The new formation of bone was most marked near the orifice of the aquæductus cochleæ, and therefore this place was examined more carefully. The osseous canal of the aquæductus cochleæ, the opening of which into the cochlea was obstructed, was, against expectation, permeable throughout, although narrow in its farther course, and the periosteum of the canal not much changed.

The *vestibulum* shows a destruction of its membranous structures. There is only little new-formed connective tissue or osseous tissue in its lumen. *The foot plate of the stapes is firmly*

fixed in the oval window by hypertrophied periosteum on the vestibular side. Its mobility, consequently, is very much diminished, as found by the microscopic examination, although not completely abolished like that of the membrane of the round window. Vestibulum and cochlea are totally segmented by a compact membrane of connective tissue.

Only a small portion of the upper *semicircular canal* of both petrous bones is preserved, because it was chiselled off by mistake before hardening of the specimens. From the condition of the remaining semicircular canals, it easily becomes clear why it had been overlooked. Only a portion of the lower crus of the right posterior membranous semicircular canal is preserved, which is very much changed. The external osseous semicircular canal is filled with osseous substance, as if the latter had been poured into it. It would have been hardly found without knowledge of its situation. The new-formed bone may be recognized by the more roundish forms of the bone corpuscles and the smaller number of their branches. Macroscopically it would have been overlooked, just like the upper semicircular canal. I perfectly agree with Mygind, Moos, and Steinbrügge; that the supposed lack of a semicircular canal, which was formerly taken for an arrest of development by anatomists, is the consequence of a past otitis interna in many cases. The posterior semicircular canal only contains connective tissue ; its upper crus is moderately sclerosed by bone-formation. It is peculiar that the cicatricial tissue is more rigid and sclerotic only in this crus of the posterior semicircular canal, but it is reticular in the other crus and in the portion of the other semicircular canals which is not filled with osseous substance.

The narrowness and the tortuosity of the membranous *aquæductus vestibuli* do not allow us to ascertain whether its lumen is patent in its whole course. It certainly does not show any marked changes. But the osseous canal appears uneven at its opening into the vestibulum.

The nerves of the vestibulum and the ampullæ fit pretty well into their canals, but can be insufficiently stained by Weigert's method.

The dura, remaining on the specimen, shows only deviations in the process entering the porus acusticus internus. At the inferior wall of the latter the dura is thickened by augmentation of the nuclei, which have a roundish or oval shape. This had not been ascertained microscopically.

The changes in the *left ear* are of the same nature, but even more marked. The *cochlea* contains only a few nerve fibres that cannot be stained by Weigert's method. The ganglion spirale is more atrophic and, as well as the lamina spiralis ossea, shows at some points formation of lacunæ, so frequently associated with atrophy. Corti's organ is destroyed, save some low remaining cells in some places. The lamina membranacea is partially wanting; in the upper windings it is drawn toward the scala tympani and adherent to the cicatricial tissue with which the latter is filled. The chief seat of ossification is the scala tympani near the round window, just as in the right ear. The lumen of the scala vestibuli is extensively obliterated by connective tissue.

Vestibulum and *semicircular canals* also show marked pathological changes. Their membranous portions are totally destroyed. The ossification is more pronounced and passes directly from the medial wall of the vestibulum to the capsule of the labyrinth, so that the borders of the latter and the vestibulum partly disappear. *The left aquæductus vestibuli is totally obliterated by ossification, which extends to its surroundings.* The nerves of the vestibulum show plainly a quantitative atrophy, although not so extensive as in the cochlea. Only the external osseous semicircular canal is partially patent. The posterior is totally ossified. The upper one has been chiselled away as in the preparation of the right ear.

Remarks.

The above description shows various changes. In both ears a recent otitis media was the result from scarlet fever with diphtheria during the weeks immediately preceding death. The left middle ear showed changes of longer standing, to be mentioned later on.

The destructions in both labyrinths were of older date and sufficed to account for the deafness, that led to deaf-mutism. They were to be considered as sequels of inflammation. The literature on this subject contains several similar cases, exhibiting not only the same destructions, but new formation of connective and osseous tissues present at the same points, viz.: the commencement of the scala tympani, directly behind the membrane of the round window, at the

orifice of the aquæductus cochleæ, and the semicircular canals. The cases mentioned in literature could be attributed to cerebro-spinal meningitis. Schultze (*Virchow's Archiv*, 119, No. 1) leaves it undecided whether his case was due to meningitis or whether the process corresponded to poliomyelitis acuta. In our case meningitis also was assumed as the probable cause, inasmuch as the dura in the meatus auditorius internus was affected and the official medical certificate contained the statement that Beck became deaf in his fourth year from brain disease.

Meningitis may be propagated to the labyrinth on four different tracks: Through the two aqueducts, the meatus auditorius internus, and finally into the middle ear and from there through the windows into the labyrinth. The aquæductus cochleæ furnishes the most frequent entrance. Very likely it conveyed the infection in our case, as may be inferred from the very great ossification at its opening into the cochlea. That the aquæductus itself was comparatively intact may be explained by the assumption, as suggested by Steinbruegge, that the infection was owing to an infusion of micro-organisms by the perilymph and not by a direct propagation of suppuration.

The lymphatic and vascular spaces in the modiolus were scarcely affected in our case. Also the rather rare transference through the windows may be excluded, because the external aspect of the windows was perfectly normal, although other places of the tympanic cavity showed alterations of older date. But the great ossification of the left aquæductus vestibuli suggests a propagation on this track at least in the left ear.

The semicircular canals were very much involved, as also observed by others. Habermann explained it by the continuous recumbent position, in which the semicircular canals are the lowest part, where the secretion accumulates by gravitation. Steinbruegge surmises a better arrangement of circulation in the cochlea than in the periosteum of the semicircular canals, which has been proved by the investigations of Siebenmann and Eichler. Steinbruegge's explanation seems to me most probable. The recumbent position

would also have acted on the corresponding points of the upper coils of the cochlea. It may however have some influence.

Bezold, who examined the inmates of the Institute for Deaf-Mutes, at Munich, found that vertigo could scarcely ever be produced in those who had become deaf from meningitis. This is due to the considerable changes in the semicircular canals. Vertigo may, however, be evoked in those cases in which the otitis interna did not affect the semicircular canals (Steinbruegge, Habermann).

The circumscribed otitis at the external side of the promontorium requires some remarks. The capsule of the labyrinth sometimes participates in the inflammation of the inner ear, as known from literature. This occurred in the region of the left aquæductus vestibuli in one case, which shows the remains of a former bone affection. The process in the wall of the promontorium, described above, had not run its course, but was still going on, as may be concluded from the osteoid tissue not yet ossified. Habermann described a similar bone affection of the promontorium in otitis media, but this was due to a recent inflammation of the labyrinth. Our case requires a different explanation, because the otitis involved the external (tympanic) not the internal (vestibular) side of the promontorium as in Habermann's case. The slight recent otitis media cannot be held responsible for the bone affection. In this case the obstruction of the blood-vessels by connective tissue, mentioned above, would remain unexplained. The similarity is remarkable to an affection of the osseous labyrinth and the stapedio-vestibular symphysis, in the so-called sclerosis of the middle ear, independent of otitis media, and described by Bezold (Second Congress of the German Otological Society, May 21, 1893), Politzer (Congress of Aurists at Boston, 1893), and the author (Sixty-fifth Congress of German Naturalists and Physicians, Sept. 12, 1893). Our case differs from that by being confined to one side, the disease not extending to the stapedio-vestibular symphysis. The periosteum in that region was more involved and the blood-vessels of a large portion of the middle ear were affected, if at all depending

on the process in the bone. It was peculiar that it occurred in such early life, whereas the hardness of hearing due to sclerosis sets in later, according to our clinical experience. However it is to be considered that an affection of the promontorium causes no disturbance of hearing, as long as it does not invade the oval window. Therefore an explanation may rather be postponed, until more cases of unilateral sclerosis have been examined anatomically. The cases which heretofore have been examined anatomically all belong to the much more frequent bilateral "sclerosis," which may have a different genesis from the unilateral.

After this digression we may return to one condition in otitis interna which throws an interesting light on the result of the functional test in this affection. Our case shows, like those of other authors, that otitis interna may lead to serious changes in the sound-conducting apparatus even without implication of the middle ear. The membrane of the round window is completely fixed by ossification on its labyrinth surface and the plate of the stapes is pretty well impacted by a rigid layer of connective tissue on its vestibular side. Therefore it will not be surprising, if the result of the functional test in otitis interna may be in favor of a disease of the inner ear as well as of the sound-conducting apparatus. Schwabach (*Zeitschrift f. klin. Med.*, vol. xviii., Nos. 3 and 4) made the most careful functional test in his case of otitis interna. In diseases of the inner ear low tones generally are well perceived and the high-pitched poorly. Schwabach however found the perception of low tones (c) wanting and that of the higher (c^2) (512 *v.*) and highest tones (c^4) very much diminished. This may be due to simultaneous fixation of the sound-conducting apparatus, or, according to Helmholtz's theory, to greater changes in the apex than in the basal coils of the cochlea. Schwabach's case corresponded to the latter explanation, the changes in the sound-conducting apparatus being comparatively slight. I would point out, that the lacking perception of low tones (by aërial conduction) in otitis interna or its residuals may be due to an affection of the labyrinth surface of the sound-conducting apparatus as well as to an unusual localization of changes in

the coils of the cochlea, according to anatomical examinations. The case of otitis interna of Schwabach, one of Bezold, and one of the author, possibly also caused by meningitis (These ARCHIVES xxi., p. 12, Germ. Edit., vol. xxii., Nos. 3 and 4), are hitherto the only ones in which the changes in the apex of the cochlea were more marked than in the basal whorl, whereas the fixation of the stapes and the membrane of the round window has been frequently described.

A CASE OF LIVING LARVÆ IN NORMAL AUDITORY CANALS.

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THE subject of the present clinical record has quite an interesting personal history. Four months previous to coming under my observation she had been delivered from her mother, at full term, through a Cæsarian operation. The mother is white; the child is a mulatto. It became an inmate of the Washington City Foundling Asylum, at which institution it was thriving, and from where it was indentured shortly after coming under my observation.

The patient was a feeble infant, age four months, well nourished and seemingly in perfect health. It had never been sick. Ate, slept, and performed all functions in a normal manner. For several days previous to my attention being called to her, the nurse had noted that she was excessively peevish, cried almost continually, slept very little, and could only be forced to take nourishment. In no way could this change in demeanor be accounted for. On the third morning a small area of dry blood was noticed in the right auditory meatus, and while inspecting this area, the nurse states that she saw what she supposed to be a maggot protrude from and then recede within the auditory canal. I saw the child for the first time at noon of the same day, July 22, 1890. I was informed that the child had given no evidence that the ears were diseased On inspection it was observed that the pinna and auditory canals were clear—the blood having been removed—and that the auditory canals appeared slightly swollen; but no pus, blood, or foreign body could be observed. I could elicit no

history of previous inflammation of ear or purulent discharge from auditory canal. Deep illumination of auditory canal was extremely difficult, on account of slightly swollen condition of canal and excessively restless state of infant, but after several moments spent in careful inspection a moving reflex was visible deep in the auditory canal. I was inclined to believe this moving reflex to be pus, but after a few moments spent in watching, I noticed that the movement was too active, and that the body creating this reflex described a rotary motion rather than the undulating motion characteristic of a pulsating fluid. I was now inclined to believe the statement of the nurse, and, grasping an ordinary pair of knee ear forceps, succeeded in extracting one living worm from the right auditory canal. Through a similar procedure two large larvæ were extracted from the left ear. The removal was unattended with injury to auditory canal or membrana tympani. After drying the canal of the little blood at fundus of each canal the canals were closed with borated absorbent cotton. Examination on succeeding day showed no evidence of acute or chronic purulent inflammation in either middle ear. Auditory canals and membranes normal. No perforations or evidences of inflammation within or external to membrane. The larvæ were fully developed, large, and very active. They must have been within this child's ears for a period of three days or more.

All authorities seem to consider it somewhat difficult to remove these pests from the auditory canal, but I found the extraction of these extremely easy. A few moments after immersion in 90 per cent. alcohol they ceased active movements, and a few minutes thereafter were dead. In any case where extraction by forceps or syringing proved ineffectual, I should think, from my experience with alcohol, that the use of this agent would cause them to rapidly relax their hold, so that they could be readily syringed out of the auditory canal.

Some years ago when it was considered a crime to cure a "running" from the ears, or even to give them ordinary cleansing, the deposition of larvæ in striking neglected cases of chronic ear suppuration was not uncommon. Very few otologists of the present day have ever seen such a condition,

and only know of such occurrences as matters of ancient history. The deposition of larvæ in normal ears is exceedingly rare. There is nothing in a normal, clear auditory canal to attract the fly, and therefore the deposition of its larvæ there must belong to those strange anomalies which present themselves at rare intervals. The manner by which the larvæ gained access to the auditory canal in this case can be explained by the possibility that the child fell asleep while nursing, thus allowing the bottle from which it was feeding to tilt over on its neck with the end of the nipple projecting in the region of the auditory meatus. The dripping of the milk attracted the fly which, noticing the opening of the auditory canals, therein deposited its larvæ.

Dr. W. E. Baxter, reports a case of living larvæ in a previously healthy auditory canal, in the ARCHIVES OF OTOLOGY, vol. xx., No. 1, and makes reference to cases reported by Drs. Kuntzmar and Gruening. A very instructive article on "Living Larvæ in the Human Ear" was published in these ARCHIVES in 1871 (*Arch. of Ophth. and Otol.*, vol. ii., No. 2, pp. 37–44, by Cl. J. Blake; further an article in Hufeland's *Journal der praktischen Medicin*, August, 1824, S. 108–11; and *N. Y. Ophthalmological Society Reports*, 1882.

THE ELECTRICAL TREATMENT OF TINNITUS AURIUM.

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Upon the reactions of the auditory nerve to electrical currents a method of treatment for tinnitus aurium has been founded. The investigations of Brenner form the basis of our knowledge of the subject.

In normal individuals a sensation of sound is produced at make and break by battery currents of a certain strength, and in certain abnormal conditions this response of the auditory nerve is much more readily evoked. The reaction formula follows that of voluntary muscle, namely, kathodal closure produces a sound more readily than anodal closure, while the opening shocks only produce a sensation of sound when the currents are of greater strength.

In normal individuals a current of five milliampères or more is needed to excite the first sensation of sound with the kathodal closure, while in some cases of tinnitus one milliampère may be sufficient.

The effect of the steadily flowing current is to maintain a sensation of sound if the kathode is applied to the ears, but the anode applied in the same way does not produce a sound, and when tinnitus is present it may be increased by the kathodal steady current, and diminished or stopped by the anodal. This is in accordance with what is known of the electrotonic effect of the poles; the state of anelectrotonus causing decreased irritability, and the state of kathelectro-

tonus increased irritability in the nerves near the respective poles.

Inasmuch as tinnitus aurium is often associated with an increased state of irritability in the auditory nerve it follows that a steady battery current, with the anode to the ears, may arrest it, and many brilliant cures of the symptom have been effected in this way.

Tinnitus may complicate nearly all the different forms of ear disease: for instance, it may depend upon the accumulation of wax, or it may be due to some other temporary disorder of the ear, which can easily be cured by proper local treatment, or it may occur in patients whose auditory apparatus is normal, as a part of some general morbid condition.

More commonly, however, some chronic ear mischief exists, and the removal of the subjective noises may be a matter of great interest to the patient, even apart from his deafness or other troubles.

Electrical treatment is able to do a very great deal for some cases, provided it be properly managed. If it is not done carefully the results will be unsatisfactory.

It has been objected to the electrical treatment that it is difficult, and that the results are uncertain, and at the best only temporary, but when so little can be done in other ways for these patients it is at least a gain to be able sometimes to relieve by galvanism the very distressing symptom of tinnitus. Out of a very large number of patients who have been under my treatment for noises in the ears, about one-third have been freed by a course of treatment applied in the way to be described. Some of them have certainly returned after the lapse of several months for further treatment, and in them the symptom has for the most part again yielded promptly to the renewal of treatment. Inasmuch as it is possible to determine at the first sitting whether the patient is likely to be relieved, one objection, viz., that of the uncertainty of the treatment, no longer holds good, and it is but right and proper that the patient should be afforded the opportunity of a trial of electricity if the symptom of tinnitus be troublesome.

To apply the current to the auditory nerve it has been recommended that the patient should sit down with his head resting on a table, in such a way that the ear to be treated is uppermost; the external auditory meatus can then be filled with water and the electrode introduced into it just so far as to dip into the water; the other electrode may be applied to the sternum, to the nape of the neck, or may be held in the hands, or it may be arranged underneath the other ear, the side of the patient's head resting upon it.

Of these several positions of the indifferent electrode the last is probably the worst, for it is difficult to see how the effect of the anode can be brought to bear upon one ear without at the same time producing a kathodal zone near the other ear; but wherever the negative electrode may be placed, there is always some likelihood, if both ears are very sensitive, that the ear not operated on may give responses, coming as it does within a region of virtual kathode when the anode is applied to the other ear, and *vice versa*, and indeed if one ear be much more sensitive than the other the application of a current to the less sensitive one may produce sounds in the opposite ear only, and then the normal formula of the auditory nerve may appear to be reversed, the responses being produced by a virtual kathode in the more sensitive ear when the actual anode is applied to the other, and so on, a state of things very likely to confuse the experimenter, particularly when his patient is not very intelligent. This reaction of the opposite ear has been called the "paradoxical reaction."

Fortunately the auditory nerve can be acted upon in other and simpler ways, and best of all by a bifurcated or *divided* electrode, which can be applied to both ears at once. At a pinch a binaural stethoscope answers very well, small metal discs being substituted for the ivory ear pieces; these ends may be applied just in front of the tragus and kept in place without unnecessary force by an elastic band or spring.

The parts in contact with the skin should not be of less diameter than two centimetres. If the surface of the electrode is too small some soreness of the skin may be produced at the points of contact. A pad of moist absorbent wool

should be placed between the electrode and the skin. The indifferent electrode is placed at the back of the neck, where it is kept in position by the pressure of the clothing; and a galvanometer and a rheostat should be included in the circuit which enables the operator to introduce or remove a resistanee of 10,000 ohms quite gradually. When everything is ready the current is slowly and steadily raised by the current collector to five milliampères (the rheostat being at zero). As the resistance of the skin diminishes, the current will increase slowly, the galvanometer may be allowed to indicate eight or ten milliampères, each ear receiving half that current. If the current should be inclined to rise higher the rheostat must be brought into use to keep it at that strength. The patient should be instructed to pay attention to the noises and to give notice of any change occurring to them in the course of the sitting.

The effect of the application of the anode to the ears should be to diminish the noises, that of the kathode to increase them. The reverse sometimes happens, however, and therefore the patient must be tested to find out whether the current modifies the sounds. This is to be done by closing, interrupting, and reversing the current, while the patient attends to and reports the effects produced upon the tinnitus. If diminution of the sounds be produced the prospects of improvement are good, and the patient should be encouraged to persevere. If neither anode nor kathode alter the sounds, the prognosis is unfavorable, and it is hardly worth while to continue the treatment. In favorable cases the noises will diminish during the passage of the anodal current; if the current be too quickly reduced at the end of the treatment the noises may return as loudly as before, but if it be reduced very slowly and gradually this does not happen. On this account the rheostat is an important part of the apparatus; at the end of the sitting the current is to be reduced by the rheostat first and afterwards by the collector. If it happens that the tinnitus is dispelled by the treatment, at first the relief is quite temporary and the noises will probably return within an hour, but after each sitting the period of quiet is longer until finally they disappear altogether. If

the sittings are repeated daily for the first week much time will be gained, afterwards it will be sufficient to apply the treatment twice a week for a fortnight or three weeks, or a month, according to the progress of the case.

In testing the patient with sudden makes and breaks of current it must be remembered that currents of ten milliampères produce a very unpleasant sensation of shock and giddiness, when they are applied to the head. It is therefore wise to begin the test with currents of two milliampères, gradually increasing; and to give the patient warning of each make and break, telling him first what the effect of them will be. I am accustomed to depend very greatly upon the result of the first sitting. If the tinnitus can be modified or arrested, the case will be successful, and the treatment just described should be carried out patiently, but if the sounds persist whatever the direction or the strength of the current may be, then the case will be unsuccessful.

In progressive sclerosis of the middle ear, in which tinnitus is so common a symptom, the prospects of its cure by electricity are not very favorable. In testing these patients one may meet with a whole series whose bones are absolutely unaffected by the electrical currents.

A NEW MYRINGOTOME.

By THOS. H. SHASTID, A.B., M.D., Galesburg, Ill.

THE accompanying illustration is that of an instrument which I have found so useful that I wish to offer it to the profession. It is a myringotome, the operative extremity of which consists of three triangular blades set upon a shaft at equal intervals, and terminating in a common point. Each blade cuts on the principle of a Beer's cataract-knife. This instrument makes a triple incision—represented at the left of the figure—at a single puncture. It is of service, of

course, chiefly in cases of inspissated or tenacious mucus or pus in the tympanum. In these cases a simple, slit-like incision is often wholly inadequate for the removal of the masses, and the triple incision produced by the instrument I offer is, as compared with either a flap or an extensive incision formed by a knife, produced with less difficulty to the operator and less pain to the patient since it is made at one single puncture.

The instrument is made by E. B. Meyrowitz, of New York City, to whom my thanks are due for skill shown in its construction.

MICRO-ORGANISMS IN THE HEALTHY NOSE.[1]

By ST. CLAIR THOMSON, M.D., M.R.C.P., and
R. T. HEWLETT, M.D., M.R.C.P.

"THE authors have been working at the bacteriology of the upper air-passages. Commencing with the nose they first of all investigated its bacteriological condition in a state of health.

"The results arrived at contrast in a striking way with those obtained by the majority of previous observers, and are in direct opposition to the opinion held by many physicians and founded chiefly on *a priori* reasoning. About 500 litres of air, bearing on a low average 1500 organisms, are inspired every hour. As all or at least the greater portion of this comes in contact with the moist mucous membrane lining the tortuous passages of the nasal fossæ, it has been taken for granted that the interior of the nose must show a rich profusion of micro-organisms. This conception is now widely adopted, and its general acceptance probably accounts for the scarcity of recorded observations of bacterioscopic examinations of the nasal cavity in a state of health.

"The literature of the subject is gone over in chronological order. Only two papers have been found devoted entirely to the bacteriology of the normal condition; all other references to the healthy state are made only incidentally in the course of researches on diseased conditions. The most diverse results have been arrived at both as to

[1] An abstract of a paper read before the Royal Medico-Chirurgical Society, London, May 28, 1895.

the varieties and abundance of organisms met with. Only two authorities—Loewenberg and Hajek—find a scarcity of bacteria in the nose; others record a greater or less variety and profusion. One observer finds the streptococcus of Fehleisen present in one out of every five healthy individuals, and another found the *Diplococcus pneumoniæ* (Fränkel-Weichselbaum) once in every four observations. This latter observer frequently met with the *Bacillus pneumoniæ* (Friedländer), the *Streptococcus pyogenes*, and the *Staphylococcus pyogenes aureus*, and not only in considerable numbers, but sometimes in pure culture.

"The method of examination adopted by the authors was that of cultivations on agar and cover-glass preparations stained with gentian violet. No attempt was made to differentiate the organisms met with. This research only dealt with the presence or absence of bacteria, and a simple method was adopted to insure uniformity of comparison. Thirteen healthy individuals were examined. Twenty-seven cultures and fourteen cover-glass preparations were made from the vestibule of the nose. Seventy-six cultures and thirty cover-glass preparations were made from the mucous membrane of the nasal cavity. The results are summarized as follows:

"i. In all bacterioscopic investigations of the nasal fossæ, in all researches as to the action of nasal mucus, etc., a clear distinction must be made between the vestibule of the nose and the proper mucous cavity. The former is lined with skin, and is furnished with hairs and with sudoriferous and sebaceous glands; it is not part of the nose-cavity proper, but only leads to it.

"ii. The neglect of this distinction may account for the discrepancy in previous observations on the subject. Contamination with the lining of the vestibule is difficult to avoid, even when this source of error has been realized.

"iii. In the dust and crusts of mucus and *débris* deposited among the vibrissæ of healthy subjects micro-organisms are never absent. They are rarely scanty in number; as a rule they are abundant.

"iv. On the Schneiderian membrame the reverse is the

case. The authors do not assert that micro-organisms are completely absent; obviously some must occasionally occur, but under normal conditions they are never plentiful; they are rarely even numerous, and in more than 80 per cent. of their observations no organisms whatever were found, and the mucus was completely sterile.

"v. The occurrence of pathogenic organisms must be so infrequent, that their presence on the Schneiderian membrane can only be regarded as quite exceptional.

"Clinical experience bears out the above conclusions, and their application in practice is sufficiently obvious.

"In conclusion, the authors touch upon the problems suggested by the above, and refer to the questions they are at present engaged in solving."

THE TREATMENT OF INTRACRANIAL ABSCESSES FOLLOWING PURULENT DISEASES OF THE EAR.[1]

By THOMAS BARR, M.D.,

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GENTLEMEN: Seven years ago at the memorable meeting of the International Otological Congress in Brussels, I had the honor of bringing before my confrères a new departure in the treatment of intracranial abscess, due to purulent ear disease. I refer to the operative treatment, which had at that time been recently inaugurated in Great Britain by Professor Macewen, of Glasgow; by Mr. Barker and Mr. Victor Horsley, of London; and by Mr. Caird, of Edinburgh. I narrated on that occasion the details of two cases of mine, operated on by Professor Macewen, in each of which an abscess in the temporo-sphenoidal lobe was recognized, reached, and drained with complete success. I then stated as my opinion that it might even yet be within the possibilities of surgery to expose the sigmoid sinus, remove pus from that region, and clear out septic thrombi from its interior; all this has now been realized. The inauguration of these operative measures proved a brilliant epoch in the history of surgery, and, during the seven years which have elapsed since our meeting in Brussels, very many lives have been saved in all parts of the civilized world by the adoption of the operative method of dealing with these complications.

[1] Introduction to discussion at the International Otological Congress, held at Florence, 1895.

The Scope of Operative Treatment.

Gentlemen, at the present stage in the history of the operative treatment of intracranial lesions due to ear disease, it may be said that we are able to reach and deal successfully with the following conditions: 1. Abscess in the cerebrum, especially in the temporo-sphenoidal lobe. 2. Abscess in the cerebellum. 3. Purulent formations at the base of the skull, either (*a*) between the bone and the dura mater (the so-called extra-dural abscess), or (*b*) between the dura mater and the surface of the brain (the subdural abscess). 4. Infective thrombosis of the sigmoid sinus, even when secondary foci may exist elsewhere.

Preliminary Opening of Middle Ear.

In many of these conditions we are able to reach the abscess most conveniently from the cavities of the middle ear; in others we can deal with it more satisfactorily through a trephine opening in the lateral wall of the skull above or behind the middle ear.

In *all* of these conditions it is essential, as a preliminary operation, to explore the cavities of the middle ear by removing the outer wall of the antrum. With the cavities of the middle ear thus opened, we ought to scrutinize with a good light and a reflecting mirror the bony partition which separates the tympanum and antrum at their roof from the dura mater, as well as (and this is perhaps more important still) the bony partition at the sigmoid groove. The existence of a carious aperture, of an exposed dura mater or sigmoid sinus, or of granulation tissue sprouting from these will regulate our further procedure. The partitions of the roof and sigmoid groove, separating the middle ear from the temporo-sphenoidal lobe above, and from the sigmoid sinus behind are, without doubt, the two great pathways by which the infective matter effects its fatal entrance to the interior of the cranium. Fortunately they are both accessible, and readily accessible from the middle ear spaces, and by the preliminary and essential operation of opening these spaces we are able to remove the pus, the cholesteatomatous mat-

ter, the granulation tissue, the cario-necrotic debris, and the pathogenic organisms from the antrum and attic,—those primary and dangerous formations (the "dynamite" of Prof. Macewen), which bring the patient's life into peril. Well for such patients if, by the timely removal of these, the danger has been anticipated and averted!

Modes of Operating—The Rotating Bur.

In the presence of symptoms pointing to abscess, meningitis, or septic thrombosis, we must now from the middle-ear spaces, boldly and without hesitation, open the vulnerable and bony partitions and *follow up the path of invasion.* This is done with great safety and efficiency by means of the rotating bur propelled by a dental engine, supplemented by the use of a good sharp gouge. In exposing the cavities of the middle ear, as well as in opening these lethal partitions, I now rarely use the chisel and mallet since professor Macewen directed attention to the globular dental bur which, with the help of a gouge, I find more safe and satisfactory than the chisel and mallet. I show you here these burs, and I also show you temporal bones which demonstrate their effects both on the normal and diseased bone. In employing this method of breaking down bone it is very important to use burs which are very hard and sharp, and those made at Philadelphia are much the best. A dental engine of considerable power, worked with the foot, is required; the handpiece is held like a pen, and the lateral part of the bur is applied to the bone which, as the bur rapidly rotates, is raised in flakes. To prevent excessive heat developing, as well as to allow inspection of the parts, the bur should be momentarily removed every few seconds. It is possible with this instrument to avoid any structure in however close proximity it may be. As Professor Macewen observes: "Dark apertures or a membrane such as a pyogenic membrane, or the sigmoid sinus, or dura mater, are readily seen on the white polished surface made with the bur." By this mode of operating, even although there be an abnormality in the relative positions of the interior of the cranium to the

middle-ear spaces—such as unusual depth of the middle fossa (brachycephalic skulls), or an unusually anterior and outer position of the sigmoid fossa,—the dura mater or lateral sinus need not be injured, although exposed. When we are working deep in the bone, and especially if the osseous tissue is soft, a sharp gouge yields effective aid, while a mirror on the forehead, reflecting good light into the deep cavity, is essential to safety. I would here emphasize the fact that by simple and judicious extension of the operation for exposing the cavities of the middle ear, familiar to all of us, we can, in many cases of intracranial complication from purulent ear disease, reach the seat of mischief and deal satisfactorily and safely with it, and in *all cases* such exposure of the middle ear (antrum and attic) with opening of the cranial septa should take place before proceeding to the use of the trephine.

Extra-Dural Abscess.

Having broken down the cranial partitions we shall find, in a certain proportion of cases, pus between the dura mater and bone, the extra-dural abscess, in one or other of the vulnerable situations. Above the tegmen antri or tegmen tympani, pus is often found extra-durally, the removal of which, without going deeper, brings about the disappearance of grave symptoms. Such extra-dural formations may be the precursors of temporo-sphenoidal abscess, just as similar formations at the sigmoid groove often lead to septic thrombosis of the lateral sinus, general septicæmia, or cerebellar abscess. Operations for the removal of extra-dural abscess have been singularly successful, and so I find that during these seven years thirty-nine cases have been reported of extra-dural abscess either at the tegmen or at the sigmoid groove operated upon and followed by recovery.

Septic Thrombosis of Sigmoid Sinus.

It may be said that extra-dural abscess in the situation of the sigmoid groove is generally associated with septic thrombosis in the sigmoid sinus, hence in all such cases the sinus should be carefully examined. If it is found to be occupied,

as it generally will be, by a thrombus, and if symptoms exist pointing to disintegration of the clot and general septic infection, the blood current, if still flowing through the sinus, should be stopped, in order to prevent further systemic infection. This is achieved either by ligature of the jugular vein in the neck, as first proposed by Victor Horsley; or, as advocated by Macewen, slitting up the freely exposed sinus, removing the septic thrombus, stuffing with iodoform gauze, and by pressure bringing the outer wall of the sinus into contact with the inner, thus obliterating the venous tube. If there is reason to believe that the sinus is quite occluded, and the circulation entirely checked, the simple application of antiseptics and pressure may suffice. In the hands of Victor Horsley, Arbuthnot Lane, Ballance, and others, the operation of ligaturing the jugular vein in two places and cutting between has proved very satisfactory, and there are now thirty-six recorded cases of successful operations where septic thrombosis and general infection existed.

Operating upon Intra-Dural Abscess.

Further exploration, by opening the dura mater at the tegmen of the middle ear or behind the sinus, will depend upon the symptoms as well as the conditions found present. In the presence of symptoms of lepto-meningitis, such extension of the operation may reveal purulent formations between the dura mater and brain, in one or other of these localities, the removal of which may save the patient. No doubt the purulent exudation in such cases is generally too diffused to be susceptible of thorough removal, and these are certainly the least hopeful of all intracranial complications in ear-disease, yet the experience of Professor Macewen and others has shown that localized purulent collections in lepto-meningitis may be removed, with the results of saving the patient's life. If granulation tissue be seen protruding from the exposed dura mater, careful inspection should be made, when a sinus may be found leading into the arachnoid cavity. The discovery of such a sinus would call for the free opening of the dura and, in the event of purulent forma-

tion with perhaps ulceration or erosion of the surface of the brain being found, thorough cleansing and antiseptic treatment of the interior would give the patient a chance, as shown by the fact that sixteen cases of success are recorded of operations for the relief of purulent collections due to lepto-meningitis.

Cerebral or Cerebellar Abscess.

In the presence of symptoms pointing to abscess in the temporo-sphenoidal lobe or in the cerebellum (and the diagnosis of an uncomplicated abscess in the temporo-sphenoidal lobe may be said now to belong to the region of certainty), no time should be lost before we open the abscess cavity by means of a canula and trochar or hollow needle, remove its contents, and, as far as possible, cleanse and disinfect the interior. In dealing efficiently with such abscesses in the temporo-sphenoidal lobe, or in the cerebellum, a trephine opening is required in the lateral part of the skull above the ear, or, in the case of the cerebellum, behind the sigmoid sinus. In the case of temporo-sphenoidal abscess, we might, no doubt, by simply increasing, with the bur, in an outward direction, the size of the opening in the tegmen, reach, evacuate, and drain the abscess very thoroughly; and such an enlarged opening it would be well to make in any case. Yet it is found that, in order to get rid of the sloughs of brain tissue, loaded with septic organisms, generally found in such abscesses, a trephine opening through the wall of the skull, of half an inch in diameter, is also required in addition to the opening connected with the middle ear.

Mixed Cases of Intra-Cranial Disease.

"In uncomplicated abscess of the brain operated on at a fairly early period recovery ought to be the rule."[1] It is to be remembered, however, that many cases are of a mixed character. We often have abscess formation in the brain with lepto-

[1] Professor Macewen in the work, *Pyogenic Infective Diseases of the Brain and Spinal Cord.* 1893.

or pachy-meningitis, or with septic thrombosis of the lateral sinus, or the whole of these conditions may exist at the one time in the same patient. If lepto-meningitis exists along with abcess in the brain tissue the symptoms of the latter are masked by those of the former, and we are apt to conclude that we have to deal with a pure meningitis, and decide against operation. My experience however would incline me to the view that, although the symptoms may be those of lepto-meningitis, our duty is to expose the middle and posterior fossa of the skull, and search for pus. A few weeks before leaving Glasgow, I had a case in point. A woman, twenty-eight years of age, had suffered from a purulent disease of the right middle ear from early childhood. In the month of July she was seized with symptoms of intracranial mischief. There were vomiting, intense pain all over the head, rigors on three occasions, persistently elevated temperature, quick pulse, delirium with unceasing movement, and entire absence of sleep. In fourteen days from the apparent commencement of the intracranial mischief these symptoms terminated in death. Immediately after seeing her for the first time, I opened the cavities of the middle ear with the bur, removed fœtid purulent matter and inflammatory debris. I also exposed the dura mater at the roof of the antrum and also the wall of the lateral sinus—these openings, you will see in the patient's temporal bone which I show you here, and they also illustrate the efficiency of the bur. There was no thrombosis of the sinus, and no pus between the dura mater and bone in either situation. As the symptoms did not seem to point to abscess in the brain but rather to meningitis I proceeded no farther. On examining the interior of the skull after death, while I found extensive lepto-meningitis on both sides with lymph and purulent deposit, there was likewise an abscess in the temporo-sphenoidal lobe, the pus from which had partially made its way through two perforations in the base of the lobe into the middle and posterior fossæ and also into the spinal canal. From the thickness of the pyogenic membrane lining the abscess, there was reason to believe that the abscess had existed for a considerable time before the onset of the symptoms of

intracranial mischief, and I belive the lepto-meningitis was really set up by the escape of the pus into the sub-dural space. While the trephining of the skull would not have saved this patient at the time she came under my observation, it would perhaps, from the surgical point of view, have been more satisfactory had the collection of pus been exposed and drained as far as possible. It is even conceivable that, at a very early stage of the symptoms, the meningitis might have been checked and the patient's life saved by the thorough removal and drainage of the contents of the abscess and the antiseptic treatment of the affected parts. I would therefore say that the present trend of surgical opinion is that we shall rarely go wrong if, in the presence of grave intracranial symptoms evidently due to a chronic septic process in the middle ear, we explore the various pathways by which the disease invades the interior of the skull, and, if no extra-dural collection be found, or when found, if its removal be not followed by marked improvement, we open the dura mater, and examine the sub-dural space; and even then, if the results be negative, we need not hesitate to explore the temporo-sphenoidal lobe or cerebellum or both.

The record of work during the past seven years in the operations for cerebral and cerebellar abscess has been remarkable. At least 59 cases of cerebral and 7 cases of cerebellar abscess have been thus successfully treated. Many of these were associated with septic thrombosis of the sigmoid sinus, some with meningitis.

The Brilliant Results Achieved.

Gentlemen, it is rare in the history of the healing art to find within the limits of seven short years so brilliant a record of life-saving work as is presented by this department in the years separating the famous Brussels congress from what I believe will be the equally famous Florence congress. In the various medical journals I have found, in these years, records of 158 cases in which operations followed by complete recovery have been performed for the relief of the intracranial complications of purulent ear

disease. I think we are justified in believing that, in addition, there have been many unrecorded cases. I know myself of some such cases. When we consider that most of these occurred in persons in early life or in the prime of life, we must feel that few branches of medicine can boast of a greater record of beneficent work. But, gentlemen, in the glamour of these great achievements we must not lose sight of the fact that our great aim and object should be to avert these dire results of purulent ear disease. By the enlightenment of the general public, through the fuller education of the profession in the gravity of those affections, by instructing the profession in the rational treatment of these affections, and by the development of those operative procedures calculated to remove hitherto intractable forms of purulent disease of the ear, we may in the future, to a great extent, prevent these intracranial complications. Indeed, I feel persuaded that the time will soon come when, with few exceptions, every purulent affection of the ear will be within the curative resources of our art.

Points for Discussion.

Finally, gentlemen, might I suggest as subjects for discussion the following points:

1. Is it desirable that the pure otologist should himself operate on the skull and brain in these intracranial complications of ear disease?

2. Should the interior of the cranium be opened even when the symptoms point to diffuse meningitis?

3. What is the best method of dealing with a thrombosed lateral sinus—ligaturing the jugular or incision and pressure?

4. What is the best method of perforating the bone while opening the cavities of the middle ear, or the cranial septa of the middle ear?

5. The value of operative treatment on the cavities of the middle ear for the cure of intractable purulent cases, as preventive of intracranial abscesses.

A CASE OF MULTIPLE OTITIC CEREBRAL ABSCESS.

By Dr. TREITEL of Berlin.

Translated by Dr. J. A. Spalding, Portland, Me.

THE question of the frequency with which several abscesses may occur simultaneously in the brain may have excited renewed interest, owing to the recent discussions on this topic between Koerner (1), and Schwartze (2),[1] and because upon its answer depends to a great extent our prognosis for an operation. Furthermore, when we see two such competent authorities apparently differing in regard to the frequency of this state of affairs in the brain, it is well worth our while to add fresh material to the discussion.

Whilst Koerner (3) asserts that the simultaneous occurrence of several cerebral abscesses may be counted at such and such a percentage, Schwartze thinks that this condition is a rarity. But when we come to analyze their papers we find that there is but little difference after all. For Koerner found in ninety-four cerebral and cerebellar abscesses nine multiple in the same portion of the brain, *besides* six per cent. of multiple abscesses in different portions of the brain, making in all about fifteen per cent., and if we sum up all of Schwartze's cases, both clinical and from his Pathological Institute, we actually find nearly seventeen per cent. of multiple cerebral abscess.

The decision of the whole question depends of course upon cases verified by an autopsy, for when a few days after opening an abscess a second incision is necessitated for the

[1] Compare the literary references at the end of the paper.

purpose of relieving serious symptoms, and evacuates fresh pus, the case is simply one of *retention* by cerebral prolapse, as in the cases published by Knapp (4), and Truckenbrod (5).

Careful examination of the pages of these ARCHIVES shows only eleven autopsies in cases of cerebral abscess, five by Heimann (6), two each by Moos (7) and Truckenbrod (8), and one each by Rothholtz (9) and Knapp (10). In these eleven autopsies there were multiple abscesses in the brain in six cases or even in but five if we omit the simultaneous occurrence of a cerebellar abscess and an extra-dural accumulation of pus in one of Heimann's cases. On the contrary, in Heimann's first case, it is probable that a multiple abscess was first present and later became one extensive abscess, for, from any other point of view, extension over the frontal, temporal, and occipital lobes would be incomprehensible. I think that if this case had come to an autopsy earlier, a multiple abscess would surely have been discovered.

A recent case of this nature under my own observation will now receive brief consideration.

Mr. S., aged twenty-two, consulted me in October last, for violent headache, which had tortured him for several days and was so severe as to rob him of sleep. The family physician who had sent him to me for an opinion, thought that as there had been for years a chronic otorrhœa, there might be some connection between the latter and the severe headache. In point of fact the ear had of late suppurated more than usual, whilst previously it had been mostly dry or had secreted but little. The right meatus contained some fœtid muco-purulent secretion, on removal of which, a reddish surface came into view, which, on my attempting paracentesis proved to be the reddened mucosa of the promontory. There was no localized pain, nor could any be obtained by pressure at any spot over the entire calvaria. Not even the mastoid was tender to pressure. No vertigo, vomiting, or unsteadiness in walking, even with the eyes closed. Hearing of left ear normal; of right ear, loss of hearing for whispered voice.

The otorrhœa had originated in scarlatina in youth, and the patient had been always well till the recent pain in the head. The patient's father had been a stone-cutter, and had died two years before of pulmonary tuberculosis.

Not being able to make any diagnosis of cerebral otitic disease, I sent the patient home, but was called to him after three days as he had taken to his bed, because the headache persisted, and none of the usual remedies were of any avail. The patient, though sleepless for many days, was completely conscious, and complained of nothing but his head. Other symptoms, except very slight nausea at times, were absent. The secretion from the right ear was abundant. Some brain affection was suspected but of that there were no symptoms except the headache and the pulse. The pupils were equal in size, not contracted, of normal reaction, whilst the ocular muscles as well as those of the face and extremities were undisturbed. Temperature in the morning 37.5° (100° F.), and in the evening 38.3° (101° F.). The pulse measured 74, but every seventh beat was suspended. Bodily condition weak. Two days later slight stiffness in the neck on bending forward. A specialist in nervous diseases, called later in consultation, was unable to find anything upon which to base a decided diagnosis. He examined the patient ophthalmoscopically and decided that the fundus of the eyes and all the ocular reflexes were normal. It was decided to remove the patient to a hospital for an operation for cerebral abscess, provided its presence could be established.

October 16th.—Half conscious, violent pain in head, slight stiffness of neck, profuse fœtid discharge from right ear, pulse 75, resp. 20, temp. 37.9° (100° F.).

October 17th.—Soporous, reacts well to external impressions, complains of pains in head, especially on right side, pulse irregular, but averages 80. Respiration 20, no vomiting, no disturbance of speech, and no reflexes.

October 18th.—The left angle of mouth falls, and the left side of face looks paretic. Temp. 37.9° (100° F.).

October 19th.—Comatose. Facial paralysis more marked. Pulse irregular. No sugar in urine.

October 20th.—Death.

The autopsy shows pus oozing from an abscess in the lower surface of the right temporal lobe. The corresponding dura is discolored. The upper corner of the temporal bone shows an irregular loss of substance from which an offensive exudate issues. A probe can be passed through into the middle ear. The posterior portion of the temporal lobe, and the adjacent portion of the occipital lobe contain an abscess as large as an apple, together with several smaller ones farther behind in the occipital

lobe. All of these abscesses are separated from the surrounding cerebral tissue by a yellowish-green membrane, whilst the brain tissue itself is œdematous and yellowish. The inferior cornu and Ammon's cornu are dislocated. Otherwise, the brain and the cerebellum are normal.

Lungs normal; slight fatty degeneration of heart.

After sawing the temporal bone, the defect above mentioned was seen to lead into a small cavity, surrounded by darkened bone and embracing the entire cupola. The labyrinth could not be examined microscopically, but with the naked eye nothing abnormal could be seen. Mastoid sclerosed, few cells, and these containing slight mucus.

Remarks.

Was it possible in this case to diagnosticate a cerebral abscess, and then to save the patient's life? This question must be answered in the negative. The severe pain in the head, the irregular pulse, and the marked prostration led us early to suspect some cerebral disease, and the presence of the otorrhœa made a cerebral abscess seem very probable, but all local symptoms were absent, and none of the other possible brain diseases could be excluded. Thus; the case might have been one of tubercular meningitis; and there are cases in which a cerebral abscess has been diagnosticated, which upon operation turned out to be tuberculous meningitis. We once had in our clinique a child in whom when living a cerebral abscess was diagnosticated, but in which the autopsy showed cerebral tuberculosis. A cerebral tumor was improbable, because otorrhœa and tumor at the same time have never yet been observed in any patient of this age, and, besides, our patient had a hectic fever, which tended rather to show suppuration and no tumor. Beyond this, an extra-dural abscess could not be excluded with certainty, though there was no external swelling on the skull, and no fistula. The latter is rarely found until after a broad opening of the mastoid process. The sensorium was too little affected for a cerebro-spinal meningitis, the stiffness of the neck too slight, the temperature too low, and the abdomen not affected. The absence of rigor and local swelling in the neck argued against the presence of sinus-thrombosis, but the latter could not positively be excluded.

Once in the hospital, the symptoms became more distinct: the mind more affected, the neck stiffer, and finally opposite facial paralysis. Cerebral abscess in the right temporal lobe was now very plain, but the stiffness in the neck suggested an intercurrent meningitis, and the operation was postponed. At last the patient died.

The autopsy teaches us that the symptoms led us astray, and for that reason they must be farther considered, for the thickening and discoloration of the dura over the perforated tegmen was referable to a chronic otorrhœa. Stiffness of the neck, according to Koerner, so far as we have to decide between an abscess and meningitis, points to a cerebellar abscess, but our case shows an error in this respect. Inversely, we can have a basal meningitis without stiffness of the neck, as in Truckenbrod's case, in which the autopsy showed a purulent exudate at the base of the brain, most at the chiasma and the left motor oculi, without any stiffness of the neck showing itself during the patient's life. Hence, the latter symptom cannot be relied upon in the diagnosis of a cerebral abscess.

Neither is a solitary paralysis of the facial nerve of much value for local diagnosis. Generally, crossed paralysis of the facial or spasm of the same is a sign of a temporal abscess on the same side with the diseased ear. But it can also be produced by the distant action on the pons of a cerebellar abscess, and from that with the simultaneous presence of the stiffness of the neck we might diagnosticate a cerebellar abscess. So, too, abscess in the pons excites facial paralysis on the same or opposite side. But, on the whole, it is only by consideration of all the symptoms that a local diagnosis is rendered possible; we see too often that no great value can be placed on any one single symptom.

STATISTICS FROM THE PATHOLOGICAL INSTITUTE IN BERLIN.

From the history of six thousand autopsies which I have consulted in this institute, I find in all twenty-one cerebral abscesses, seven of which were due to otorrhœa, and fourteen to other causes, so that otitic brain abscesses form a third of all abscesses so far verified by autopsy in this region.

This agrees with the statistics of Pitt (3). All of these seven otitic abscesses were single except one case, in which an aural affection might possibly be excluded, as the second abscess lay on the opposite side of the brain from the ear that had caused the original abscess. One temporal abscess was so ramified that it probably became one by the confluence of several. Four abscesses were in the brain, three in the cerebellum. All the patients were adults. Only one was uncomplicated, and that in the cerebellum. Twice the abscess broke into the third ventricle, twice thrombo-phlebitis was excited, and five times meningitis.

This complication of affairs should not excite surprise, for there are cases in which the cerebral abscess has terminated fatally, and we cannot be sure that it was previously uncomplicated. But for cases which come late under observation, it is of great importance to know that cerebral abscess is generally complicated with other cerebral affections, and that, for this reason alone, no operations are of any avail.

Of the other fourteen cerebral abscesses from unknown causes, five were multiple. Some were undoubtedly due to pyæmic emboli, and in one case numerous small abscesses were discovered on the surface of the brain as a sequence of influenza. Two cases are of particular interest, as due to suppuration of the frontal sinus producing a frontal abscess. And at this point let me mention that in another case a similarly located suppuration produced meningitis and sub-dural collection of pus.

LITERARY REFERENCES.

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2. SCHWARTZE. *Ibid.*
3. KOERNER. *Die Otitische Erkrankungen des Hirns*, 1894.
4. KNAPP. These ARCHIVES, xxii., p. 143, and xxiii., p. 155.
5. TRUCKENBROD. These ARCHIVES, xv., p. 176.
6. HEIMANN. These ARCHIVES, xxii., p. 33.
7. MOOS. These ARCHIVES, xxiii., p. 198; xxiv., p. 41.
8. TRUCKENBROD. These ARCHIVES, xxi., p. 158.
9. ROTHHOLTZ. These ARCHIVES, xiv., p. 133.
10. KNAPP. These ARCHIVES, xxiv., p. 161, and xxi., p. 239.

A NEW TYPE OF INFLUENZA OTITIS.

By Prof. O. KOERNER, of Rostock, Germany.

Translated by Dr. J. A. Spalding, Portland, Maine.

THE widespread influenza epidemic of 1889 and 1890 was immediately followed by a large number of less extensive epidemics, and then by sporadic cases, and even to this day we see occasional cases of typical influenza. Now, just as after the huge epidemic, so, too, after the less, we meet with frequent complications on the part of the ear.

On looking over the abundant otological literature bearing on this topic, we are struck with the protean forms which the aural complication assumes. In addition to the common otitis media, which cannot be distinguished bacteriologically or clinically from the same disease due to other causes, we meet with special forms which had rarely been described before the epidemic of five years ago. Whilst the frequent appearance of ordinary otitis media in influenza was once explained by the diminished resistance to the bacilli excited by the epidemic, or by the assertion that the influenza offers a more favorable field for nourishing these bacilli, we may now suspect that the more frequently observed forms of otorrhœa observed during and since the epidemic were due to the influenza bacilli themselves. These forms, therefore, ought to be regarded as genuine influenza otitis. Amongst these, I find the following:

1. The form beginning with a hemorrhagic exudate and hemorrhagic pustules on the *Mt*, as described by Patrzek, Dreyfuss, Schwabach, Haug, and others.

2. The form first seen by myself, and later verified by

others, with swelling of the mucous layer of the drumhead, and knob- and bag-like proliferations on the drumhead so that the passage is almost obliterated. To this class belong the profuse granulations of the thickened mucosa, which bulge out through perforations in the *Mt*, are perforated in the middle, and, when snared off, sprout again abundantly. (Bezold.)

3. The primary central affection of the mastoid with secondary participation of the tympanum, as mentioned by Eulenstein and myself at the meeting of German aurists at Bonn in 1894.

To these three types I will now add a fourth, which has, I think, not yet been described, and which I have had a few opportunities to observe. Having seen cases so far apart as from Frankfort-on-the-Main to Rostock on the Baltic, it cannot be rare, and others may have seen the same thing. The patients were a man of thirty-six, a nurse in a hospital, and a boy of six.

Mr. U. was seriously affected with influenza in September, 1894, and on the third day the right ear became painful. On the next morning, perforation of the *Mt* with bloody secretion. The pain had mostly disappeared when I was called in on the eighth day, but abundant secretion still escaped from a large perforation in the posterior-inferior quadrant. The mastoid was sensitive to pressure. The pain and swelling yielded rapidly to ice-bags. At the end of a week a protuberance above the perforation was split open, and considerable pus evacuated. A similar swelling a week later was similarly treated. Early in October the *Mt* offered a remarkable aspect. The hammer could not be seen, and the *Mt*, grayish-red in tint, was hidden behind a half-dozen copper-red granulations about the size of a large pin-head. The aspect was just as if granulations of the mucous layer were pushing forward the drumhead from behind. Auscultation failed to discover any exudate, and the hearing was very good. In a day or two the redness had disappeared from most of the membrane, the hammer was again visible, the granulations had disappeared, and in their place were ring-like hemorrhages corresponding to the margins of the former granulating surfaces. The rings were not closed, but open on one side, and on the grayish-red background of the *Mt*

they offered a picture bearing the greatest possible resemblance to a panther skin.

The nurse, with temperature of 102°, was on the fourth day of the influenza attacked with violent pain in the right ear, but diminishing on the following day on the appearance of a sero-hemorrhagic discharge. Small hemorrhages on the gray background of the bulging *Mt.* A paracentesis evacuated abundant secretion. The hemorrhages continued on the next few days, but fever and pain were absent. On the seventh day after the paracentesis, panther-like spots on the *Mt.* Ten days later, drumhead and hearing normal.

The boy was attacked with pain in both ears, most severe in the right on the third day of the influenza, and on the fifth day he was brought to the hospital with temp. 104°, insensible, and occasionally delirious. Drumhead flesh-red, hammer indiscernible, and a white spot indicating pus. Paracentesis was at once done, pus evacuated; the patient soon improved, and the perforation closed. The tonsils, appearing much enlarged, were abscised with Gottstein's knife, but the operation was followed with pain in the left ear, demanding repeated paracentesis. The *Mt* soon cleared up, and showed appearances similar to those in the two other cases. Hearing was in due time entirely restored.

This state of affairs, characterized chiefly by the secondary ring-shaped hemorrhages, bears some resemblance to those forms of influenza otitis already described by other authors. The primary hemorrhagic form is suggested by the ring-shaped hemorrhages appearing after the evacuation of the exudate, or paracentesis, whilst the proliferation of the mucosa through the *Mt* may stand side by side with the prolapse of the mucosa described by Bezold.

REPORT OF THE OTOLOGICAL SECTION OF THE BRITISH MEDICAL ASSOCIATION MEETING IN LONDON, WEDNESDAY, JULY 31ST.

Sir WM. DALBY, President, after a short preliminary address, showed a case of objective noises in a young woman; the noise, of a creaking character, synchronous with the pulse, could be easily heard by approximating the ear to that of the patient. No satisfactory explanation of the condition could be given.

Mr. CRESSWELL BABER also showed a somewhat similar case,—a young woman in whom the noise, of a soft, blowing character, synchronous with the pulse, could be heard by means of the auscultation tube. He thought the sound was probably muscular.

Dr. DUNDAS GRANT then read a paper on the "Treatment of the Various Forms of Nerve Deafness." After giving a classification of the various forms of nerve deafness he discussed their treatment. With regard to pilocarpine he considered it useful in labyrinthine effusions, if used before organization of the effusion had had time to occur.

Dr. MACNAUGHTON JONES followed with a paper on "Some Etiological Considerations on the Treatment of Nerve Deafness," in which he drew attention to the fact that middle-ear disease often accompanied disease of the internal ear; he found pilocarpine and electricity of no service.

In the discussion which followed, Dr. BARR said he had been disappointed with the results of pilocarpine and thought that any good which resulted was due to a mental effect. He had used it in cases of recent labyrinthine effusion, when vertigo, tinnitus, etc., were present.

Dr. LAW referred to the treatment of syphilitic cases with mercury and iodide of potassium, and mentioned two cases of deafness during secondary syphilis in which the deafness defied all treatment.

Dr. WOODS had had similar experiences.

Mr. E. H. BENNETT reported three cases in which slight improvement had occurred under pilocarpine, and related the case of a child who, after being treated for keratitis, became deaf, the hearing being practically restored under pilocarpine and politzerization.

Dr. MILLIGAN and Dr. WARDEN had both used pilocarpine with little result.

Mr. G. FIELD was satisfied with the good results obtained by pilocarpine in properly chosen cases; and had had many successful cases.

Sir WM. DALBY regretted that Mr. Field could not give scientific details of his successful cases.

Dr. DUNDAS GRANT and Dr. MACNAUGHTON JONES then replied.

Dr. MILLIGAN, of Manchester, in dealing with tuberculous disease of the middle ear and its adnexa, said that tubercle more often attacked the middle ear than some writers had believed. Painless perforation of the membrane, especially when complicated with facial paralysis, was usually an indication of tubercle. He had operated on ten cases of mastoid suppuration in children and had inoculated guinea-pigs with scrapings; in eight out of ten tubercular infection followed. Dissected guinea-pigs, drawings, microscopical sections, etc., shown.

Dr. BARR then dealt with the treatment of intractable suppuration of the middle ear by operation through the mastoid. He uses and strongly advocates the globular dental bur in operating, followed by the gouge. He found that the discharge ceased in from two to eighteen months after operation.

Dr. BRONNER read the notes of five cases of attic disease, treated by modified Stacke's operation, in which ordinary treatment had failed.

Drs. LAW, MILLIGAN, WOODS, and URBAN PRITCHARD took part in the discussion which followed.

Dr. LAW showed a series of forty anatomical specimens sent by Professor POLITZER.

THURSDAY, AUGUST 1ST.

Professor MACEWEN read a paper on "Cerebral Complications in Relation to Middle-Ear Disease."

After treating of the difficulty of localizing cerebral complica-

tions, he insisted on the necessity for early diagnosis of tubercular disease of the middle ear, and of bacteriological examination. All the diseased parts should be thoroughly dealt with at the operation, and the antiseptic method should be strictly carried out. He preferred the bur with dental engine to the chisel in perforating the bone. He thought that by proper treatment extension of infective disease to the cranial contents from the middle ear could be prevented.

Dr. LUC cited "a case of cerebellar abscess, secondary to a cholesteatomatous deposit in the mastoid antrum."

Mr. MARMADUKE SHIELD, and Drs. MILLIGAN, BARR, MCBRIDE, and Mr. BALLANCE then spoke in reference to tubercular disease of the middle ear.

Dr. URBAN PRITCHARD, after dwelling on the importance of early and thorough treatment of chronic middle-ear suppuration in order to obviate future necessity for antrum and intercranial operations, strongly supported Dr. MACEWEN in his insistence upon strict antiseptic precautions when operating.

Dr. DUNDAS GRANT and Mr. WOOD joined in the discussion.

In his reply Professor MACEWEN thought that operations should not be withheld even in the most advanced cases.

Dr. URBAN PRITCHARD at King's College Hospital, showed the following cases which had been treated by him in his hospital practice :

1. A girl whose malleus had been extracted for caries, resulting in perfect healing and almost perfect hearing.

2. A man who had been operated on for a temporo-sphenoidal abscess several years previously.

3. A man who had been operated on three years ago for cerebral symptoms secondary to middle-ear suppuration, an abscess having been found in the groove of the lateral sinus.

4. A man who, after an acute otitis, had had a subdural abscess in the posterior fossa which was operated on with rapid recovery. In this case the symptoms had been very slight and the temperature never above 99°.

5. A girl whose mastoid antrum had been opened on account of severe and long-continued pain, which completely disappeared after the operation.

6. A man who had a hyperostosis of the meatus, completely occluding it, which had been removed by means of his special trephine and dental engine ; the meatus now appearing normal.

He also exhibited specimens of aspergillus which had occurred in his practice, and commented on its rarity in England.

FRIDAY, AUGUST 2D.

Mr. CARMALT JONES read a paper on "Turbinotomy, in Connection with Tinnitus," and showed an instrument invented by him for the purpose. He claimed good results from the operation, which he had performed some 500 times.

Dr. BRONNER and Dr. MACNAUGHTON JONES doubted the necessity and efficacy of the proceeding.

Dr. F. SPICER had seen good results.

Dr. WARDEN and Dr. URBAN PRITCHARD thought the operation should not be lightly undertaken.

Professor GUYE read a paper on a not yet described form of "Rotatory Sensation in Patients Suffering from Labyrinthine Disease," relating the case of a patient who, during an attack of Ménière's symptoms, complained that objects appeared to turn round in the direction of the hands of a clock: and if the rotatory sensation was slight the patient made an involuntary movement in the same direction; if severe, in the opposite direction.

DR. URBAN PRITCHARD, Dr. BARR, and Dr. BRONNER spoke on the subject.

Dr. MACNAUGHTON JONES then read a paper on "The Various Forms of Ménière's Disease." He thought pilocarpine was occasionally of use in these cases.

Professor GUYE thought that in many of these cases there was a removable cause present.

Dr. BARR and Mr. CRESSWELL BABER discussed the paper.

Dr. URBAN PRITCHARD urged the necessity of accurate diagnosis in Ménière's disease.

Mr. CRESSWELL BABER showed a dummy which he had had made for demonstrating post-nasal growths.

Dr. PEGLER exhibited sections of hypertrophied turbinated bodies.

Mr. LAKE showed specimens, demonstrating the connection of the membrana propria of the membrana tympani with the periosteum.

Dr. WARD COUSINS showed improved ear-drums. In the discussion which followed, general preference of the cotton wick to any other form of ear-drum was expressed.

After a vote of thanks to Sir WM. DALBY and the honorary secretaries, the session closed.

SECTION OF LARYNGOLOGY.

Professor GUYE opened a discussion on "The Etiology of Mucous Polypi of the Nose." He agreed with Zuckerkandl on the whole, but in many cases no cause was to be found.

Dr. LUC thought catarrh and occasionally bone lesion were sometimes the cause, but in most cases they appeared to arise spontaneously.

Dr. MCBRIDE considered that polypi growing from the middle meatus and papillomatous hypertrophy of the infer. turbinal were similar; the former being converted into œdematous fibromata, the force of gravity being concerned in their production. Neither inflammation nor empyema could account for all cases. He also thought that irregularity of the mucous membrane might probably have something to do with their causation.

Dr. HODGKINSON had never observed necrosis, and said empyema was not a necessary factor.

Dr. SCANES SPICER thought necrosis was rare in ethmoiditis.

Dr. WM. HILL thought that Woakes's theory was not altogether wrong, and said that "myxomata of the nose and ear were much alike."

Dr. BOSWORTH was surprised that any one should take Woakes's theory of necrosing ethmoiditis seriously.

Dr. MORIZ SCHMIDT thought polypi were due to inflammation of the mucous membrane and muco-periosteum.

Dr. J. N. MACKENZIE inclined to the inflammatory theory.

Dr. DALY thought that suction in inflammatory conditions was a factor.

Dr. NEWMAN said polypi were never myxomatous and thought œdema and hypertrophy of the mucous membrane were causes.

Mr. LAKE had never seen a myxoma or œdematous fibroma of the nose.

Dr. WATSON WILLIAMS thought bone changes were the cause.

Dr. DE ROALDES stated that polypi were more frequent in whites than in blacks, and that catarrh and empyema were also less frequent in the latter.

REPORT ON THE FOURTH MEETING OF THE GERMAN OTOLOGICAL SOCIETY, HELD AT JENA, JUNE 1ST AND 2D, 1895.

By ARTHUR HARTMANN, Berlin, and SELIGMANN, Frankfort-on-the-Main.

Translated by Max Toeplitz, New York.

The meeting of the German Otological Society of this year excelled by the large attendance and a series of interesting papers and discussions. It proved that the society has full vitality and its creation met a long-felt want. The resolution passed by the meeting on the separate publication of the transactions expresses to the outside world the independent position of the society and its importance for otology. The preparations of the meeting were excellently made by Prof. Kessel of Jena. A small collection of instruments and apparatuses was exhibited in the rooms adjoining the meeting hall.

FIRST MEETING.

President: Walb, Bonn.

The president welcomed the society, commemorated the death of the members, Helmholtz, Lemcke, and Gottstein, who had died during the past year, and reported the admittance of eighteen new members.

1. Hartmann: *Dehiscences in the petrous bone, filled by fibrous membranes.*

Hartmann presented the following specimens: Specimen of a *normal petrous bone.* In the tegmen tympani, there exists a place

the size of a lentil, consisting, instead of bone, of a firm, transparent membrane, which at the upper as well as at the lower surface, passes smoothly into the surrounding bone.

Furthermore, three specimens taken from patients who had died from the consequences of otitis media suppurativa chronica and cholesteatomatous formation respectively (sinus—thrombosis, cerebral abscess). In two cases the membranes were found in the roof of the mastoid antrum; in another case, upon the posterior surface of the petrous bone, partly occupying the sulcus sigmoideus. In the centre of this extensive membrane a piece of bone of about the size of a lentil was found to be firmly attached to the osseous surroundings, but connected with it only by the membrane. In no case was there an attachment of the osseous membranes to the dura mater, which passed smoothly into the adjoining bone.

The first specimen is explained as a rare occurrence of anomalous development.

The osseous membranes are produced by irritation of the bone through the inflammatory process, as a retrogressive transformation of the bony into connective tissue, which during operations may give rise to mistakes between them and the dura mater.

2. KRETSCHMANN, Magdeburg: *The purulent processes in the lower space of the tympanic cavity.*

KRETSCHMANN elaborately describes the anatomical relations of that portion of the tympanic cavity which overlaps inferiorly the sulcus tympanicus, and proposes for it the name of recessus hypotympanicus. The anatomical relations of the adjoining Eustachian tube, canalis caroticus, tuberosity of the facial, jugular vein, and also the thickness of the separating osseous layers are fully discussed. Among the pathological affections, Kretschmann confines himself to the purulent processes, which are mostly situated in the posterior apex. In these cases the patients frequently complain of a subjective sensation of tension in the mastoid portion. The treatment consists of irrigations with a canula of corresponding curve and cauterization with chromic and trichloracetic acids. In chiselling the mastoid, Kretschmann recommends chiselling the lower wall obliquely for better survey and treatment.

Discussion: WOLF recommends for granulations in this cavity, curettement with his spoon, and not with the snare. The latter, when used by him for the removal of a pulsating tumor of the

recessus hypotympanicus, caused extreme hemorrhage and death from pyæmia.

WALB recommends, for the examination of the hypotympanic space, the use of double mirrors.

HESSLER advises, with the reference to danger of injury to the facial, as emphasized by KRETSCHMANN, asking the patient's permission before cutting through the facial.

KRETSCHMANN has not found the double mirrors to be effective.

3. BARTH : *The so-called lateralization in bone conduction.*

Lateralization in bone conduction is either subjective, according to its perception by the examined person, or objective, which may be controlled by two homogeneous otoscopes. The latter is due exclusively to changes in the conduction and resonance. In subjective hearing across the head, apart from the above-mentioned two cases, unilateral affection of the perceiving apparatus rarely causes objectively demonstrable alterations of conduction and resonance, probably assisted by the more favorable conditions of transmission of sound to an examined ear, of sound reflexes and the occlusion of a diseased ear against sound actions from without. Without influence upon unilaterally intensified hearing are : intensified pressure upon the inner ear, so-called hyperæsthesia of the acoustic. The phenomena in WEBER'S experiment thus depend upon complicated relations, so as not to permit its blind application as a measure for diagnosis, although its critical use may frequently lead to quite useful results of examination.

4. DENNERT : *Contribution to the study of tone hearing.*

DENNERT considers for this purpose the use of the quantity of sound as the most adequate means. In order to receive an equal quantity he does not allow the tuning-fork to sound out uninterruptedly, but only for one second or once in a second to approach it to the patient's ear, until nothing is perceived in approximating such duration of time ; in approximating more than one second, the tone hearing returns. For tuning-forks of different pitch the conditions differ.

BARTH has observed two cases in which brief approach of the tuning-fork remained unperceived, whilst sounding out was noticed. For such experiments he has devised an apparatus, consisting of an upper disk with large openings, and a lower one with small opening, revolving against each other, to which a tuning-fork is attached. The latter records its vibrations upon the disk covered with fat.

5. LUCAE: *Further communications on the experience gained from the resilient pressure probe.*

Forty-six cases in which all high tones were still well perceived, were selected and examined with RINNÉ's experiment; and these were treated with the pressure probe only. It resulted in considerable improvement of twenty-eight cases with positive Rinné, and in the transformation of eight cases with negative Rinné into positive ones. Twelve cases with negative Rinné were inconsiderably, and six not at all, improved. In bilateral affections, the ear with positive Rinné was improved. All twenty-eight cases but one with positive Rinné still perceived musical tones very well, those with negative Rinné very poorly. In the one case with positive Rinné c^4 was not perceived before, but again after treatment. A case with Ménière's symptons was also completely cured.

6. HAUG: *Three cases of intramuscular abscesses after otitic pyæmia.*

In the discussion, BRIEGER believed these to constitute a different form from those described nowadays by FRAENKEL as dermatomyositis septica in consequence of otitis media suppurativa.

HAUG describes a case of hemorrhagic vesicles and maculæ after dentalgia without demonstrable cause, which were observed upon the membrana tympani and external auditory meatus.

7. KAYSER. *Contribution to the pathology and treatment of objective ear noises which, according to their mode of development, are divided into tubal and real ear noises.*

The tubal noises are either muscular or elsewhere developed, as in autophonia, but transferred by changes in the tube. Against the latter form, KAYSER has successfully applied indifferent fat, occluding the mouth of the tube. He considers the first form as allied to chorea and hysteria, caused by contractions of the tensor veli palati. He uses for treatment an irritation by pressing either the velum palati, mastoid process, or the teeth, but with varying success. If the snapping noise is produced by the separation of the tubal walls, a probe is introduced with immediate good result, which persisted in but three cases.

ZAUFAL prefers to distinguish the noise produced by the separation of the lateral from that of the medial tubal wall. In the latter cases he recommends massage by irritation of the velum palati with the finger downward or by pressing the tubal walls against each other.

A discussion on the possibility of hearing the noises produced by contraction of the tensor tympani then arose, in which BRIEGER, BARTH, ZAUFAL, NOLTENIUS, and BECKMANN participated, but which did not lead to concordant views.

SECOND MEETING.

WALB, of Bonn, was elected first president for the following year, and ZAUFAL, of Prague, second. The sum of 100 marks was granted to the HELMHOLTZ monument. The resolution on the publication of the transactions, of which every member receives one copy, is carried. The next meeting shall take place before Whitsuntide at Nuremberg. The annual fee of 10 marks for membership is retained.

8. KRETSCHMANN: *Partial restoration of the auricle.*

Lupus of the inner surface and a portion of the external surface of the auricle, treated locally and generally without success, made Kretschmann in such a case to destroy the entire area and to cover the defect by a plastic operation. The diseased skin was removed down to the cartilage and covered by a flap formed from the adjoining skin.

9. KRETSCHMANN, furthermore, demonstrates *steel tacks for the fixation of flaps.*

10. ANTON: *Contribution to the knowledge of Jacobson's organ in adults.*

After an historical introduction ANTON reports that not all examined persons had this organ, and he believes that this absence is congenital. This is concluded from the fact that the organ was not developed in one embryo, and only unilaterally in a new-born; it was, however, found in spite of simultaneous atrophy of the mucous membrane. It always consisted of an open cleft, or trough-shaped sulcus, and a closed canal, the openings of which are frontally somewhat displaced towards each other. The canal consisted mostly of an extensive enlargement and some smaller excavations, which are unequally linked together; it invariably took a somewhat ascending course. The epithelium was medially high, laterally low. The glands are acinous mucous glands varying in number; they enter on the whole mostly the upper wall. Anton frequently found a basal membrane and a few calcareous concretions. The investigations did not result in the disclosure of the function of the organs.

11. HESSLER: *The treatment of acute suppuration of the middle ear and mastoid process.*

Suppurations of the middle ear frequently or mostly persist as consequences of affections of the naso-pharyngeal cavity. The recovery from these affections accelerates the course of the acute suppuration. In order to prevent extension of the infection from the nose, HESSLER warns against POLITZER'S method in acute suppuration. The removal of the pus is effected by the dry method, particularly in profuse secretions; extreme fluid cleansing produces furuncles. If in acute cases trephining of the mastoid process is indicated, typical chiselling only, according to SCHWARTZE, is to be performed; irrigations through the mastoid cavity are to be avoided, and loose plugging takes their place; change of dressing every two or three days. The patients shall not be kept too long in bed, since long confinement retards the convalescence. In hydræmic conditions only convalescence should be patiently awaited.

In the discussion, PANSE recommends dressing the ear after the preliminary paracentesis, and forbids the patients any manipulation of the ear. For developing maceration of the external meatus, he uses solutions of nitrate of silver.

BARTH prefers irrigating to washing the wound, and washes also the surrounding parts.

STACKE operates for five years aseptically, dryly, and plugs the bottom of the cavity firmly, not loosely.

BRIEGER does not apprehend retention of pus from plugging of the auditory canal.

HARTMANN believes that for years the majority of aurists have treated the initial stage of acute suppuration without irrigations and aërial douche. In chiselling, irrigations or washing are not required, but long-continued plugging may retard the healing process.

NOLTENIUS does not believe that plugging interferes with the discharge.

REINHARD, BARTH, WALB, and HESSLER participate in the discussion.

12. JOËL: *Leptomeningitis purulenta following otitis media purulenta acuta in a child, aged three.*

A boy, three years old, was seized after measles with otorrhœa of the right ear and empyema of the mastoid process, whilst the general condition was hardly disturbed. Typical chiselling and removal of great masses of granulations from the antrum. The

bone towards the middle cerebral fossa and external semicircular canal was intact. During the first four days after the operation the condition was entirely normal, but on the fifth day intense vomiting and high fever ensued, which could not be explained by the immediate change of dressing; paracenesis of the thin cicatrized membrana tympani evacuated but a few drops of pus. During the continuation of high temperatures, headache, paralysis of the facial and abducens, constipation and delirium appear, so as to render the diagnosis of meningitis certain (background of the eye hardly changed). On account of hereditary tuberculous taint and the absence of extension of suppuration towards the cerebral cavity, a tubercular meningitis seemed quite probable. On the nineteenth day after chiselling, *exitus letalis*. The autopsy had to be confined to the head, without the removal even of the entire petrous bone. An extensive meningitis was found at the base, extending into the canal of the spinal cord, and, at some places, particularly along the large vessels, to the convexity, but without tubercles. The inner surface of the petrous bone did *not* present *any* carious places, and particularly at the sutura squamosa and the hiatus subarcuatus normal conditions existed. On the other hand, the *inner meatus* was filled with pus, in which the acoustic and facial were embedded. The tympanic cavity contained a small amount of pus; the ossicles were apparently normal.

The absence of another cause for the meningitis justified the belief of an extension of the suppuration through the labyrinth (probably after the destruction of a fenestral membrane).

A boy, æt. four, was observed almost simultaneously with the former case having slight purulent discharge from the right ear without demonstrable cause. After the disappearance of a circumscribed swelling of the external meatus, a small perforation could be demonstrated in the postero-inferior quadrant. Intercurrent influenza with temporary albuminuria (which appeared likewise in a younger sister of the child) led to high temperature and severe disturbance of the general condition. The pronounced picture of meningitis gradually developed with paralysis of the nerves of the facial and ocular muscles, delirium, and stiffness of the neck, and exitus took place under these phenomena. Since, apart from a slight sensitiveness to pressure the implication of the mastoid process could not be demonstrated, a tuberculous meningitis was considered as most probable, although extension to the

meninges through the inner ear could not be entirely dismissed in consideration of the above-mentioned case.

The autopsy revealed extensive basal meningitis without tubercles, and without implication of the petrous bone (apart from slight otorrhœa). The case is to be explained as meningitis post influenzam.

Both cases teach the difficulty of diagnosing endocranial processes, which appear simultaneously with otorrhœa, particularly in childhood.

13. STACKE: *A method of otoplasty in extensive bone defects.*

Several flaps are formed in the following manner: A main flap without the periosteum, with the base upward, the apex downward, the latter corresponding with the apex of the mastoid process; then a periosteal flap inversely from the linea temporalis, both serving to cover the upper and lower wall, respectively, of the operative cavity; and finally the flap from the external meatus, used with the periosteal flap to cover the lower half of the wound. If the periosteal flap is too small, an occipital flap is circumcised, deprived of its periosteum, and replaced to its former position; this periosteal flap serves to enlarge the second flap. A disadvantage of the method is the persistence of the fistula, which may be osteoplastically covered after years.

Discussion: NOLTENIUS considers KOERNER'S flap almost invariably as sufficient.

ZAUFAL prefers, unless the periosteal flap produces new bone, SIEBENMANN'S method.

KRETSCHMANN would like to avoid the subsequent rarefaction of the flaps, and argues against the method on account of the formation of flaps from two sides.

HARTMANN is in favor of KOERNER'S flap.

LEUTERT explains the necessity of persistent openings in cholesteatoma for the prevention of relapses.

NOLTENIUS leaves, in the formation of KOERNER'S flap, a thick drainage tube for two weeks in the external meatus.

KOERNER emphasizes the necessity of forming different flaps in the osseous wound of different form; the first incision should permit any form of plastic.

HANSBERG and others participate in the discussion, which, in general, results in a disinclination against complicated formations of flaps.

THIRD MEETING.

President: ZAUFAL.

KOERNER and JANSEN give their report *on the methods of operation in the different otitic cerebral complications.*

14. KOERNER: *Historical introduction and general considerations.*

During the middle of the eighth decennium of this century the field was first opened by SCHEDE, who had cured a fistula of the petrous bone following a cerebral abscess. We owe to ZAUFAL the idea of opening the sinus, and of ligating the jugular vein. Careful selection of the diagnosed cases led to the first successes; the belief to find the abscess in the seat of the crossed paralyses, the motor centre, led to failures. KOERNER gave a synopsis of the results of autopsies, pointed to the seat close to the diseased ear, and proposed to enter the abscess from the petrous bone; he was followed by MACEWEN, who exposed the temporal lobe by removal of the tegmen tympani, but, in some cases, also from the squama, or from both places. BERGMANN opens the middle cerebral fossa from the tegmen tympani et antri, thus meeting the course of the suppuration in the centre, and follows it up in both directions. In this way extradural abscesses, etc., which could not be diagnosed, were found. The after-treatment is practised in different ways, mostly as loose plugging, not always by irrigations; sinuous abscesses should be examined with artificial illumination. In the autopsies of operated persons mostly multiple abscesses, in those of *non-operated* persons but one abscess is invariably found. Disintegrated tissue around the abscesses, and hemorrhagic foci are also found. These are the results of the last two years.

15. JANSEN: It is important in those cases, which present the symptoms of intracranial suppuration, but do not admit of an exact diagnosis, to know the frequency of the different affections.

From the case-books of the aural clinic in Berlin Jansen, during the last three and a half years, could record, among 184 still unpublished intracranial suppurations, 144 cases of extradural abscesses, 35 of thrombosis of the lateral sinus, and 5 cerebral abscesses.

Among the extradural abscesses, the suppuration in 161 cases

was located in the posterior, and in 38 in the middle cerebral fossa, whilst in 14 both fossa were affected.

Hence it follows, that the extradural suppurations form by far the most frequent complication in suppurations of the middle ear, and particularly in the acute form.

The extradural suppurations prevail in the posterior cerebral fossa over those in the middle one by about the fivefold number; in the chronic forms the proportion is almost 2:1. Of our five intracranial abscesses two were cerebellar and three cerebral.

These numbers give us important indications for the mode of the operative procedure. In cases with doubtful diagnosis, therefore, one opens at first the posterior cerebral fossa subsequently to chiselling of the mastoid process, and searches according to their successive frequency for perisinuous abscess, sinus thrombosis, and cerebral or cerebellar abscess.

After explaining the method of operation, Jansen believes that for epitympanic suppurations, the removal of the tegmen tympani from the mastoid process frequently suffices. In more extensive suppurations, he recommends the opening of the middle cerebral fossa according to VON BERGMANN'S suggestions, but following the chiselling of the mastoid process. In pachymeningitis, the dura mater should be incised, and in circumscribed arachnitis purulenta, dura and arachnoid together.

Jansen elaborately discusses a third form of extradural abscesses, which perforate from the vestibule through the semi-circular canals to the postero-superior surface, the prognosis of which is unfavorable on account of their deep situation. These deep abscesses mostly occur in connection with suppurations of the middle ear, and are comparatively rare. In order to expose these foci of pus, it is necessary to open the middle cerebral fossa from the squama, and to remove the upper as well as the posterior wall of the mastoid portion up to the labyrinthine nucleus. This even is not always quite sufficient. Since the labyrinthine suppuration of these cases is of a very destructive nature, and *greatly* endangers the arachnoid, Jansen recommends the opening of the vestibule in connection with the exposure of the extradural abscess, and describes the method.

On account of a case of deep-seated extradural abscess of labyrinthine origin, treated by him at the beginning with great success, Jansen tries to prove the correctness of his proposition.

Jansen recommends the same method of operation for those

cerebellar abscesses in which the suppuration has extended from the vestibule and the canals respectively to the cerebrum, and furthermore also for those in which a vestibular suppuration can be positively diagnosed. After this radical opening of the middle and posterior cerebral fossæ, with the removal of the posterior and upper wall of the mastoid portion, of the canals, and the posterior portion of the vestibule, one gains a wide operative field for the opening of the cerebellar abscesses at the anterior surface of the cerebellum.

According to the same method, but without attacking the labyrinth, Jansen has lately twice opened the abscesses in the temporal lobe at the lower surface, by an incision of from 5 to 6 *cm* in length, with good result in one case, with temporary success in another. Among other advantages, this method enables one to find even deep-seated fistulæ, to operate on the sinus thrombosis from the same wound, and to place but a small portion of the dura outside of the skull after recovery, since the larger portion is directed toward the cavity in the petrous bone. In opening the posterior cerebral fossa in connection with chiselling of the mastoid process, the mostly affected section of the sigmoid sinus is seen first. If normal, one may remember that the portion at the jugular bulb or the bulb itself may be affected. The opening is most suitably made with chisel and bone forceps. The sinus is exposed up to the foramen jugulare as far as it appears septic, and posteriorly over the thrombosed portion, if necessary, to the torcular Herophili. As far as the septic condition reaches, incisions are made and the external wall removed. If the septic thrombus extends to the jugular vein, Jansen considers the ligation of the jugular as indicated without doubt, and also in those cases in which, after opening of the sinus, the pyæmia continues. In the cases in which the thrombosis is limited to the sinus, Jansen believes, in general, the opening of the sinus to be sufficient. The conditions are, after thrombosis of the bulb, not very favorable to its dislocation.

By simple discharge of the perisinuous abscess one succeeds in protecting the formed thrombus against disintegration. The success is above all determined by the severity of the infection, a fact which is not expressed in the statistical tables for ascertaining the value of the different methods of operation.

At the conclusion Jansen communicates the results attained at the aural clinic at Berlin.

These two reports are followed by an extensive discussion from which we emphasize the following points:

KRETSCHMANN argues against clearing the sinus with the spoon on account of the danger of accessory injury and prefers the spontaneous removal of the thrombus.

JANSEN believes it necessary to remove the danger of infection through the septic thrombus simultaneously with the operative interference.

JOËL emphasizes the necessity of searching for the abscess in acute suppurations from the squama as a more adequate means for the preservation of the function of the middle ear.

KÜMMEL apprehends in exploratory punctures, particularly in those situated close together, an injury to the cerebral substance by the entrance of infectious pus into the punctured canals.

JANSEN has found in the autopsies the canals of the exploratory punctures to look either clear or hemorrhagic, but never purulent or disintegrated.

Upon inquiry by BARTH, he confirms the occurrence of ineffective operations with cure of the cerebral symptoms.

KESSEL asks for the labyrinthine symptoms in opening the semicircular canals. These, Jansen replied, were rare, since the semicircular canals have in most cases previously lost their function through the suppuration; however, temporary vertigo was present or could be ascertained by the history.

16. WOLF: *Iron, lead, silver, and mercury in otology.*

WOLF discusses the advantages as well as the disadvantages of the internal use of these metals. Iron cures chlorosis and withal the dependent trophic disturbances of the hearing function, such as tinnitus, hardness of hearing, pulsating noises; the development of the latter is observed particularly in simultaneous hereditary tendency to aural affections. His views on the action of iron are concordant with those of VON NOORDEN, who believes that faulty development, not loss of hæmoglobins, was the cause of chloræmia, and the remedy, therefore, acts as a stimulus to development. Small doses, thus, are sufficient; as much as will lie on the point of a knife is given after the first course of the dinner; steel baths and steel water are less recommended.

To silver as nitrate in form of SCHWARTZE'S cauterizations WOLF prefers the below-mentioned sublimate alcohol, which is used for staining the hair as well as lead. The latter is by far more dangerous, since sudden extreme deafness with severe neu-

ralgia may appear, as Wolf had observed in a very grave case which entirely recovered. Mercury (cf. above) is considered by Wolf as an excellent remedy in chronic otorrhœa in form of solutions of *sublimate alcohol of one pro mille.* The external meatus is filled with the solution, and its penetration into the tympanic cavity facilitated by Politzer's method. Granulations are previously removed with the sharp spoon. In a case of considerable facial and acoustic disturbance in a young girl, Wolf could not produce any material improvement with sixty inunctions of unguentum cinereum ; injections of pilocarpine, aërial inflations, and potassium iodide, until the patient was sent to Wörrishofen (Pastor KNEIPP), but then improved only in the face. Wolf believes that cures by metals are essentially effected through the mediation of the sympathetic.

SZENES believes, that in the sublimate alcohol the healing agent is more the alcohol than the sublimate.

STIMMEL prefers hydrargyrum oxydatum cyanatum in solutions of five per cent., since it is less irritating to the external meatus, and he arrives at good results by alternating it with solutions of resorcin. In Ménière's disease, even its old forms, he successfully used the inunction cure, even after the useless application of potassium iodide.

REINHARD advocates the inunction cure in lues of the inner ear.

DENNERT recommends the treatment with tonics. He has seen a large number of chronic suppurations of the middle ear, which were about to be operated, but recovered without operative interference.

17. SZENES : *Conservative or radical treatment of acute mastoid affections.*

On the strength of a few cases SZENES advises to consider the operation only as a last resort.

FOURTH MEETING.

18. *Demonstration of specimens by* KATZ, *which excited general admiration.*

After the reading of a clinical communication by SZENES on *infection from the arm of a vaccinated infant upon the external auditory meatus of the wet-nurse* follows :

19. WALB. In connection with the excellent results of the investigations made by KESSEL and HARTMANN, which confirmed v. TRÖLTSCH'S early views on the pathological condition of the secretions found in the middle ear of the new-born, particularly by bacteriological examination, WALB has directed has attention to a number of atrophic children. For cleansing the external meatus he used glycerin. In order to insure the efflux of secretions through the wide tube of infants, he used a modified form of POLITZER'S method by inflating air through small balls with good results. Walb believes that, in all not well thriving childen, the mothers and midwives should make regular inflations of air or disinfecting irrigations of the nose and naso-pharynx.

Discussion: PANSE militates against the recurrence of gonococci in the middle ear of new-born as published by HAUG (now absent), which is in strong contradiction with the results of other investigators, and he is upheld by BRIEGER and HARTMANN.

HARTMANN recommends first to wipe the external meatus dry and remove a thin membrane with the probe and forceps. If unsuccessful, the application of peroxide of hydrogen proves to be well adapted.

BECKMANN will always first operate on the pharyngeal tonsil.

ZAUFAL reminds of the possible production of ulcerations in the oral cavity by excessive cleanliness; the best method of cleaning is the act of suction, by which the secretions are simultaneously removed from the naso-pharynx and tube. It is not advisable, to trust Politzer's balloon to the midwife, as little as to leave such doubtful procedures to the public, which frequently become rather disastrous.

Then follow *demonstrations.*

20. LUCAE: *A new instrument for pulling the handle of the malleus outward in extreme retraction and adhesion of the membrana tympani respectively.*

A long thin cylinder, in which a small hook is advanced by spring and screw action. The force of the action is thereby regularly, not manually, exerted.

21. HANSBERG demonstrates, in brains hardened in Müller's fluid and alcohol, the *relations of brain abscesses to the inner capsule*, etc.

22. REINHARD presents a *cap*, which leaves enough space *for mastoid* operation, but covers the remaining head to insure asepsis;

furthermore, small *wedges for the fixation of the head* in order to spare one hand of an assistant. Demonstration of *pathologico-anatomical specimens* by Reinhard.

23. PANSE demonstrates *sterilized* small inexpensive *cloths* with holes for ear funnel and auricles, which may be thrown away after use.

24. BRIEGER demonstrates the photographic illustration of a cutaneous carcinoma of fifteen years' duration, which had implicated the ear. Carcinomatous cells could not be found on account of the long duration of the process.

25. BECKMANN demonstrates his instrument for removal of the pharyngeal tonsil.

It resembles that of GOTTSTEIN, but forms a quadrangle without the curve of the handle, is made stronger (WINDLER, Berlin), curved over the surface with frontal elevation and convexity directed upward. In introducing it, the head should be pressed forward, the instrument removing the swelling by one cut. Children of less than six months of age have been thus operated by BECKMANN. The aërial douche, therefore, is almost entirely abandoned in children, since the operation had the sufficient effect in 95 per cent. of all cases.

Discussion: NOLTENIUS operates upon the pharyngeal tonsil in chloroform narcosis.

HOFFMANN militates against it, JOËL advocates it.

WALB prefers instruments of changeable form, corresponding to the changeable form of the pharyngeal tonsil.

STACKE prefers narcosis on account of the fears of patients; his instruments are those of GOTTSTEIN and MORITZ SCHMIDT.

BRIEGER states the occurrence of relapses, argues against the belief that tuberculosis is the cause of the pharygeal tonsil and operates with TRAUTMANN'S spoon and the finger.

ZAUFAL considers the scraping of adenoid vegetations with the finger nail as sufficient on account of their softness.

HARTMANN recommends, in sufficiently wide noses, particularly in older children, the use of the cold snare through the nose.

WALB recommends the instrument of SCHÜTZ.

KAYSER has also observed relapses.

SELIGMANN believes that in narcosis a danger of aspiration pneumoniæ is threatened.

26. LEUTERT: *Two specimens, illustrating the development of cholesteatoma.*

27. KAYSER. *Demonstration of an apparatus for the exact determination of the permeability for air through the nose* (*rhinometer.*)

This somewhat complicated but ingenious apparatus consists of a pair of bellows, which suck in a definite amount of air with invariably equal force. These bellows, through an automatic device, open and close, at their own opening, the lower effluent end of a graduated glass tube, filled with water, so as to permit the efflux of water, only during the time of suction by the bellows. The more slowly, therefore, the air streams into the bellows, the more water can leave, and inversely. If the amount of the effluent water in simple suction through an open tube is known, and this tube is hermetically closed into the mouth with the diaphragm resting (expiratory position), the comparison of the then evacuating amount of water with the known quantity shows the degree of the impediment of the permeating air through the nose in every case, since the bellows can only in this way suck in the air, viz., it must draw it through nose and mouth. A table admits of ready and rapid figuring.

28. ZAUFAL closes the meeting, after the demonstration of his instrument for chiselling the cavity of the petrous bone.

List of Members Present.

1. ANTON, Prague.
2. BARTH, Marburg.
3. BECKMANN, Berlin.
4. BEHRENDT, Berlin.
5. BIEDERMANN, Jena.
6. BINSWANGER, Jena.
7. BRANDT, Strassburg i-E.
8. BRANCKMANN, Jena.
9. BREITMEG, Coburg.
10. BRIEGER, Breslau.
11. BROCKHOFF, Bonn.
12. BÜRKNER, Goettingen.
13. DENNERT, Berlin.
14. FRICKE, Stettin.
15. FRIEDRICH, Leipzic.
16. HAECKEL, Jena.
17. HANSBERG, Dortmund.
18. HARTMANN, Berlin.
19. HAUG, Munic.
20. HECKE, Breslau.
21. HEINE, Berlin.
22. HESSLER, Halle.
23. HOFFMANN, Dresden.
24. HUBNER, Stettin.
25. JANSEN, Berlin.
26. JENS, Hannover.
27. JOËL, Gotha.
28. JOSEPH, Stettin.
29. KARUTZ, Lübeck.
30. KATZ, Berlin.
31. KAYSER, Breslau.
32. KESSEL, Jena.
33. KOCH, Jena.
34. KOERNER, Rostock.
35. KREHE, Jena.
36. KRETSCHMANN, Magdeburg.
37. KÜMMEL, Breslau.
38. LEUTERT, Halle.
39. LUCAE, Berlin.
40. MEIER, Magdeburg.
41. MOLDENHAUER, Leipzic.
42. MÜLLER, Altenburg.
43. NOLTENIUS, Bremen.
44. OBERMÜLLER, Jena.

45. PANSE, Dresden.
46. PFEIFFER, Leipzic.
47. REINHARD, Duisburg.
48. RIEDEL, Jena.
49. RICHTER, Prague,
50. ROHDEN, Halberstadt.
51. ROLLER, Trier,
52. SCHUBERT, Nuremberg.
53. SELIGMANN, Frankfort o-M.
54. SKUTSCH, Jena.
55. SONNENKALB, Chemnitz,
56. STACKE, Erfurt.
57. STERN, Metz.
58. STIMMEL, Leipzic.
59. STINTZING, Jena.
60. SZENES, Budapest.
61. THIES, Leipzic.
62. ULLRICHS, Halle.
63. WALB, Bonn.
64. VON WILD, Frankfort-o-M.
65. WOLF, O., Frankfort-o-M.
66. ZAUFAL, Prague.
67. ZIEHEN, Jena.

REPORT ON THE PROGRESS OF OTOLOGY DURING THE FIRST AND SECOND QUARTERS OF THE YEAR 1895.

I.—ANATOMY, HISTOLOGY, AND PHYSIOLOGY OF THE EAR AND NASO-PHARYNX.

By Prof. AD. BARTH, Marburg.

Translated by Dr. A. Duane, New York.

A.—ANATOMY.

a.—ORGAN OF HEARING.

1. Siebenmann, F. The first beginnings of the middle ear and ossicles of the human embryo of the fourth to the sixth week. With two plates. *Arch. f. Anatomie*, 1894, parts v., vi.

2. Lake, R. Abnormal course of chorda tympani through middle ear. Two figures. *Lancet*, Jan. 5, 1895.

3. Retzius. The development of the auditory nerve. *Hygiea*, lv. (supplementary volume).

4. Weidenbaum. Upon the nerve-centres in the organ of hearing of birds, reptiles, and amphibia. Two plates. Inaugural Dissertation, Dorpat, 1894.

1. Siebenmann made serial sections from well-preserved human embryos of the first six weeks. His results are thus summed up. The first trace of the stapes is a shapeless mass of blastema, present as early as the fourth week. In the sixth week it is found in conjunction with the malleus and incus under the form of a ring of temporary cartilage ; it consists of but a single piece, and is not of twofold origin. By the middle of the sixth week all the ossicles have acquired approximately their permanent

form, and constitute a chain, the first and last portions of which are the cartilages of the first and second branchial arches. From the latter, however, and from the labyrinth, the ossicles can readily be distinguished by differences in staining properties, and hence are to be regarded as distinct segments of the primordial cranium. Of the various cavities forming the middle ear the tympanum is the only one present in the beginning, and this extends to a point directly beneath the lateral surface of the face. In the sixth week the auricle develops on the anterior aspect of the first branchial fissure and encircles the drum-membrane, which is thus demarcated. At this time the handle of the malleus already extends as far as the middle of the membrane. From the sixth week on, the development of the auditory canal and the Eustachian tube takes place by an increase in thickness of the lateral wall of the face, as a result of which the tympanic cavity recedes both from the surface of the face and from the pharynx.

SIEBENMANN.

2. LAKE found the chorda tympani, after making its exit at the usual level, running horizontally forwards to about the junction of the lowest fourth of the handle of the malleus with the remainder of the bone, so that it was clearly visible through the drum-membrane. After reaching the malleus it ran upwards, passing off from the tympanum by the canal of Huguier, and keeping below the tendon of the tensor tympani. LAKE.

b.—NASO-PHARYNX.

5. OWEN, A. The anatomy of the nasal cavity. London.

6. SMITH, E. The connection between the olfactory bulb and the hippocampus. *Anat. Anz.*, p. 470, 1895.

7 BAUR, G. The palatal region in the Ichthyosauria. *Anat. Anz.*, p. 456, 1895.

8. HOPMANN. Casts of the upper pharynx and the choanæ. *Rev. intern. de rhinol.*, etc., Feb. 25, 1895.

9. RAUGÉ, P. The incisive canal and the organ of Jacobson. *Arch. int. de laryngol.*, etc., July–Aug., 1894.

10. WRIGHT, JONATHAN. A consideration of the vascular mechanism of the nasal mucous membrane and its relation to certain pathological processes. *Amer. Journ. of the Med. Sc.*, May, 1895.

8. HOPMANN describes a method of obtaining casts of the pharynx and the choanæ in the living, the idea being to study in the most suitable way the variations that may be present in the parts.

9. RAUGÉ'S paper is an exhaustive critical review of all the French and foreign articles upon the subject of Jacobson's organ. After a careful study of the organ in the sheep in which it is particularly well developed, Raugé considers it as it exists in man, examines the numerous hypotheses that have been framed regarding it, and refutes the theories as to its physiological character, saying that it is an organ undergoing retrogressive changes and having no physiological significance whatever.

10. After a brief description of the vascular anatomy of the turbinated bodies, as it has been laid down by Zuckerkandl, WRIGHT, nevertheless, is not convinced, that the primary arterioles do not occasionally empty directly into the venous sinuses. His observations taken from microscopical sections, principally of the sheep, show that the venous return is checked, first, by the dilatation of the artery, which presses the vein against the wall of the bony canal, through which they both pass; second, by the contraction of circular muscle fibres around the arterioles and veins which would prevent over-engorgement of the vein, while the dilatation of the artery would compress the vein; third, by engorgement of the superficial tissues acting to produce compression of the veins between the parallel fibres of the periosteal layer and the elastic fibres and glands external to it. Thickening of the walls of the venous sinuses interferes with contraction of the muscle fibres. In atrophy the muscular element and, consequently, the vascular spaces to some extent become eliminated. The capillaries of the surface and the glands are in such close proximity as to easily explain transudations of serum to the surface directly from the vessels. Three illustrations clearly show the arrangement of the vessels in the bony canals, of the muscular fibres, and of the veins between parallel layers of periosteum.

TOEPLITZ.

B.—PHYSIOLOGY.

EAR.

11. MATTE. Upon the static functions of the ear, with experimental demonstrations upon animals. *Münich med. Wochenschr.*, Dec. 4, 1894.

12. BRUCK, A. Upon the relations of deaf-mutism to the so-called static sense. *Arch. f. d. ges. Physiol.*, vol. lix., p. 16.

13. STERN, L. W. The speech of deaf-mutes and the functions of the labyrinth. *Ib.*, vol. lx., p. 124.

14. FANO and MARINI. Upon the effects of lesions inflicted upon the organ of hearing. *Sperimentale*, parts 5 and 6, 1893.

15. ASHER, L. Upon the pressure in the labyrinth, particularly in cases of brain-tumor. *Zeitschr. f. klin. Med.*, vol. xxvii., parts 5 and 6.

12. BRUCK examined eighty-two deaf-mutes with reference to their ability to walk in a straight line, to hop on one foot, to stand with the legs close together or upon one leg, and to balance on a trapeze. Forty-three showed an abnormal locomotor condition. Bruck concludes that the auditory organ, or at least the maintenance of its normal function, is of significance for the statics of the body. Nevertheless various facts elicited in these experiments go to prove that the inner ear, and particularly the semicircular canals cannot be regarded as organs of equilibrium.

13. STERN examined the distinctness and fluency of speech in a series of deaf-mutes and compared the results with the equilibrium experiments of Kreidl and Pollak. He found that in every set of cases examined those who showed normal equilibrium were also much more apt to have normal speech. Thus of those who were absolutely normal as regards equilibrium, the proportion that could talk fluently and distinctly was one half, while of those who showed any abnormity of equilibrium the proportion was only one fourth.

14. FANO and MARINI from experiments upon animals argue against the view that the semicircular canals are an organ of equilibration. They found no difference between the phenomena produced by the destruction of one canal and that of another, nor between those produced by the destruction of the ramus vestibularis and the ramus cochlearis. An animal in which the entire inner ear is destroyed is better off as regards equilibration than one in whom there is only a partial injury. Impulses are constantly going from the ear to the central nervous system. These impulses, which under normal conditions are of more or less service in co-ordinating the movements of the body, produce when there is a lesion of the ear a disarrangement of the nerve centres. There is no reason for supposing that there are any but auditory fibres in the auditory nerve, and the function of the

semicircular canals, too, like that of the cochlea, is exclusively auditory.

15. ASHER discusses theoretically the arrangements for regulating the pressure in the labyrinth and endeavors to account for the marked difference (95:11) shown by the eye and the ear in developing symptoms of engorgement in the case of cerebral tumor. He then describes a case that he observed in which the masses of tumor had grown into the meatus internus and in spots as far as the lamina spiralis. The cells of the ganglion spirale were completely replaced by the new growth. The membrana basilaris, Reissner's membrane, and the stria vascularis were normal. The blood-vessels were dilated and looked as if injected with blood corpuscles. [This may occur when the temporal bone is perfectly normal, and hence cannot be regarded in every case as an evidence of engorgement.—REVIEWER.] The organ of Corti was absent, although the cells in the neighborhood were intact. The left auditory nerve was atrophic and the tensor tympani had undergone fatty degeneration. Reissner's membrane was not depressed as it was in Steinbrügge's case. It must be assumed that, owing to the protective mechanism found in the labyrinth, increased intracranial pressure may fail to produce any injury to the hearing or any anatomical changes, and hence tests of the auditory function are of no special service in facilitating the recognition of morbid processes in the cranial cavity. The ganglion spirale is probably to be regarded as a trophic centre for the organ of Corti.

II.—PATHOLOGY AND THERAPEUTICS.

BY DR. ARTHUR HARTMANN, BERLIN.

Translated by Dr. A. DUANE, New York.

MISCELLANEOUS.

16. GRÜNBERG, B. Contributions to the question of the etiology of aural vertigo. Dissertation, Bern, 1894.

17. STEUER, ALFRED. Two cases of objective noises in the ear. *Wien. klin. Wochenschr.*, No. 51, 1894.

18. JENNINGS, J. E. Earache, its causes and treatment. *Med. Review*, March 16, 1895.

19. PHILLIPS, W. C. The care of the ears during the exanthemata. *N. Y. Med. Jour.*, Feb. 16, 1895.

20. HESSLER. Erysipelas in aural affections. *Münch. med. Wochenschr.*, No. 3, 1895.

21. SZENES, S. Upon the affections of the ear occurring as the result of treatment applied for diseases of the naso-pharynx. *Allge. Wien. med. Zeitung*, Nos. 38 and 39, 1894.

22. ALDERTON, H. A. The influence of affections of the upper air-tract upon the ear. *Annals of Ophth., Otol., and Rhinol.*, Jan., 1895.

23. LERMOYEZ, M. Rhinology, otology, and laryngology, as taught and practised by the medical faculty in Vienna. Paris.

24. RICHARDS, GEO. L. Halle and the aural clinic of Prof. Schwartze. *Boston Med. and Surg. Jour.*, March 21, 1895.

25. BACON, DENCH, ADAMS, etc. Seventy-fourth Annual Report of the New York Eye and Ear Infirmary, for the year ending Sept. 30, 1894. Ear and Throat Departments.

26. KNAPP, TOEPLITZ, VULPIUS. Twenty-fifth Annual Report of the New York Ophthalmic and Aural Institute, for the year ending Sept. 30, 1894. Ear and Throat Department.

27. POMEROY, O. D., etc. Twenty-fifth Annual Report of the Manhattan Eye and Ear Hospital, for the year ending Sept. 30, 1894. Ear and Throat Departments.

28. GLEASON, E. B. Common diseases of the ear. Specimens illustrating their pathology. *Atlantic Med. Weekly*, March 23, 1895.

29. DENCH, E. B. Oral synergy. *N. Y. Eye and Ear Infirmary Reports*, Jan., 1895.

30. BACON, G. Cause and prevention of deafness. *American Medico-Surg. Bull.*, May 1, 1895.

31. CHEATLE, ARTHUR H. Bathing and aural diseases. *Lancet*, June 15, 1895.

32. GILLESPIE, L. Two cases of deaf-mutism and goitre. A case of deaf-mutism with persistent anterior fontanelle. *Provincial Med. Jour.*, May 1, 1895.

33. LERMOYEZ and HELME. Upon asepsis in otology, rhinology, and laryngology. *Annales des mal. de l'oreille, etc.*, No. 6, 1895.

34. ALT, FERD. Upon the disappearance of hearing in one ear. *Monatsschr. f. Ohrenheilk.*, No. 4, 1895.

35. GELLÉ. Torticollis ab aure læsa. *Annales des mal. de l'oreille, etc.* No. 4, 1895.

36. GELLÉ. Upon phlegmonous subcutaneous periodic œdemas. *Ib.*, No. 5, 1895.

37. RANDALL, B. A. The prime effect upon the ear of nasal stenosis. *Phil. Polyclinic*, May 4, 1895.

38. ROBERTS, N. S. A few otological and rhinological Don'ts, or what not to do in ear and nose conditions. *Med. Record*, June 1, 1895.

39. BEADLES, C. Two cases of malignant disease, involving the hypophysis cerebri. *Br. Med. Jour.*, Dec. 22, 1894.

40. TARGETT, J. H. Tumor of pituitary fossa. *Ib.*, Dec. 22, 1894.

16. GRÜNBERG repeated Lichtheim's experiments of injecting the conidia of the Aspergillus fumigatus into the semicircular canals in rabbits, but found that, as far as the production of vertigo was concerned, the results were uncertain and largely negative. He then tried the effects of a capillary stream of ethyl chloride upon the drum-membrane and auditory canal. This, by its instantaneous evaporation produced extreme cold but no mechanical irritation. In two cases out of nine tested in man, there was no vertigo ; the rest, especially those with defects in the drum-membranes, reacted in characteristic fashion. He further tried the effects of electricity upon 26 aural patients in Valentin's clinic. In agreement with Gärtner, Pollak, and Gradenigo he found that in almost all unilateral aural affections the diseased ear was more sensitive to electric stimulation than was the sound ear. SIEBENMANN.

17. STEUER describes two cases, in the first of which a crackling sound, recurring rhythmically 100 to 150 times a minute, was audible objectively at a distance of half a metre from the left ear, which was affected with catarrhal otitis media. The sound could be arrested by any of the manœuvres for lifting the velum palati. In the second case, in which the ears appeared normal, objectively audible sounds occurred, emanating from either side alternately, and capable of being arrested for a while by pressure made upon the vagus. Steuer refers these sounds to clonic spasm of the tubal muscles—*i. e.*, both the levator and the tensor palati. Treatment was without avail. [*Cf.* No. 72.] POLLAK.

18. JENNINGS describes the different remedies used in ancient times, and urges upon the general practitioner the necessity and

importance of diagnosing and caring for every patient suffering from earache. He refers to diffuse inflammation of the meatus as well as furunculosis, foreign bodies, otitis media acuta, and cases of pain of a reflex nature, with the appropriate treatment for these conditions. BACON.

19. According to PHILLIPS, the dorsal decubitus usually assumed by patients suffering from the exanthemata favors the accumulation of the morbid secretions, and the latter must be removed as thoroughly as possible. The child's nose should be frequently blown to help dislodge the secretions, and applications should be made of boric acid, glycerin, peroxide of hydrogen, etc. The great object should be to prevent the extension of the inflammation to the structures of the middle ear. BACON.

20. HESSLER gives the histories of seven cases of erysipelas with affections of the ear, which he has observed in a single semester. He adds at length the reasons for believing that a transmission from one case to another is to be excluded, so that each must be held to have developed spontaneously. In all cases the erysipelas started in the ear, passed from this over the face and head, and terminated in the auricle of the other side. The duration varied from five to thirteen days. The attempt to abort the disease by painting the skin with iodine was unsuccesful in every case, although it had been done formerly with good result in other cases, some of which have been described. None died. Hessler concludes that erysipelas does not contra-indicate operative interference ; on the contrary, in doubtful cases it supplies one indication the more. Bacteriology gives a sufficient explanation for the frequency with which erysipelas and otorrhœa are associated. From the demonstrated identity of Fehleisen's micrococcus with the ordinary pyogenic micro-organisms it would follow in practice that erysipelas is no more contagious than is acute purulent otitis media, that the isolation of an erysipelas patient is not indicated, and that the disinfection of the instruments should be as carefully performed in the treatment of otorrhœa of any sort as has hitherto been done in the case of erysipelas. An individual predisposition must be called in to account for the cases in which the disease attacks several persons in succession. If a number of persons thus predisposed happen to come under the treatment of one man, an epidemic of erysipelas is produced like that which the author encountered. MÜLLER (Stuttgart).

21. SZENES has seen otitis produced artificially by the use of

gargles and nasal douches, by the application of solutions of silver nitrate to the nasal mucous membrane, and by operations upon the nose. POLLAK.

22. ALDERTON finds that in external-ear troubles, especially cerumen, the condition of the naso-pharynx has a slight influence; in middle-ear affections the condition of the naso-pharynx exerts a great influence upon the aural processes (being directly causative in from 35 % to 88 % and partly in from 10 % to 29 %). In otitis media and interna, the naso-pharynx was partly to blame in 36 %; in otitis interna only 14 % could possibly have exerted any influence. BACON.

24. RICHARDS gives an interesting account of the clinics held at Halle, and particularly that of Prof. Schwartze, devoting most of the paper to a description of his method of operating and treatment in general of aural cases. BACON.

25. In the Ear Department of the New York Eye and Ear Infirmary 4688 new patients were treated, and 495 operations were performed, viz.: 133 paracenteses, 6 ossiculectomies for catarrhal otitis, 19 ossiculectomies for purulent otitis, 48 mastoid operations with 41 chisellings, 74 operations for adenoids, and 28 tonsillotomies. In the Throat Department 401 operations were made among 1884 new cases, including 103 removals of adenoids, 69 tonsillotomies, 4 Asch's operations for straightening the septum, and 3 curetting of the ethmoid and Highmore's sinuses. TOEPLITZ.

26. In the Department for the Ear, Nose, and Throat of the Ophthalmic and Aural Institute 2028 new patients were treated and 234 operations were performed. The more important operations were 14 openings of mastoid with chisel (among which were 2 Stacke operations, 1 modified Stacke, 1 case complicated with cerebral abscess, and 1 with cholesteatoma), 19 paracenteses (1 with tenotomy of tensor tympani), 50 removals of adenoids, 1 removal of epithelioma of palate, 24 tonsillotomies, 1 ossiculectomy, 1 separation of incudo-stapedial joint, and 1 trephining for cerebral abscess. TOEPLITZ.

27. The number of new patients treated in the Ear Department of the Manhattan Eye and Ear Hospital was 2749, in the Throat Department 3809. 236 operations were performed in the former, including 39 mastoid operations, 21 paracenteses, and 59 removals of adenoids. The total number of operations upon the nose and throat was 688, including 180 for adenoids and 16 for deflected septum and nasal deformities. TOEPLITZ.

28. GLEASON says that clinically ear diseases may be roughly divided into affections of the external ear 23 per cent., of which more than one fourth are cases of impacted cerumen; catarrh of the middle ear 45 per cent., of which less than one fourth are acute; suppuration of the middle ear 35 per cent., of which one fifth are acute; whilst affections of the internal ear constitute about 2 per cent. of aural affections. BACON.

29. DENCH refers to the observations on this subject made by Wharton Jones, Urbantschitsch, Weber-Liel, Cholewa, and others, and says "that the perceptive portion of the auditory apparatus of the ear last involved is the part attacked in a majority of cases when both ears are affected, has been suggested by the author (in a previous report)." Of twenty-six cases in which the histories were complete, it was found that sixteen presented distinct evidence of a secondary cochlear involvement in the ear last affected. He suggests that the effect of one ear upon the other depends upon the decussation of the fibres of the auditory nerve in the medulla. He says that "it seems quite probable that the pathological changes which take place in the middle ear of one side interfere with the trophic nerves of the corresponding opposite areas, and that in this way the opposite organ is secondarily involved. This view is substantiated by the occasional occurrence of symmetrical lesions, acute in character, and of such progress as to preclude the possibility of a separate involvement from a common cause." The author submits the preceding views as the result of clinical observation only, but does not wish to convey the impression that the extent of this relation between the organs of hearing is definitely known, nor that the exact manner in which this action is brought about is a matter of certainty. BACON.

30. BACON gave the statistics of 203 children, 115 males and 88 females. Of the causes of deafness: there were 10 cases of cerumen, 4 of foreign bodies, 30 of acute catarrhal otitis media, 3 of subacute catarrhal otitis media, 25 of chronic catarrhal otitis media, 37 of acute purulent otitis media, 85 of chronic purulent otitis media, 2 of chronic purulent otitis media and mastoid disease, 1 of furuncle, 1 of acute diffuse otitis externa and mastoid disease, and 5 of disease of the labyrinth. Of the 203 cases, 177 were cases of acute and chronic catarrhal and acute and chronic purulent otitic media. Many of such patients are poorly nourished, tuberculous, scrofulous, or syphilitic, so that cod-liver oil, syrup of iodide of iron, and syrup of the hypophosphites are indicated.

Examination of the ear is most important in scarlet fever, measles, diphtheria, and influenza. An early paracentesis is important in these cases, otherwise there may be great destruction of the drum-head, followed by caries of the ossicles and temporal bone. Of the 203 cases, besides cerumen, other causes were colds, influenza, adenoid growths, swimming, measles, diphtheria, teething, tuberculosis, falls, and cerebro-spinal meningitis. BACON.

31. CHEATLE draws attention to the fact that bathing, especially sea-bathing, is often the direct cause of ear troubles, mentioning acute otitis media, diffuse external otitis, lighting up of an acute condition in chronic middle-ear suppuration, occasional extension of a suppurative process into the antrum, mastoid process, etc. exostoses, rupture of membrana tympani, concussion of the labyrinth, and swelling of a ceruminous plug. He thinks the acute otitis is sometimes caused by water being blown into the middle ear from the naso-pharynx, and holds that a patient with a middle-ear discharge should never bathe, and those with a tendency to any ear trouble should never bathe without adequate means for plugging the meatus. CHEATLE.

32. At the Edinburgh Medico-Chirurgical Society GILLESPIE showed two sisters, deaf-mutes, both suffering with goitre and rapid pulse ; two other sisters, not shown, were in exactly the same condition ; the only other child in the family was a boy, who was perfectly healthy. Improvement in general condition occurred under iodide and bromide of strontium. He also showed a female deaf-mute aged nine years with persistent anterior fontanelle and partially separated halves of frontal bone. CHEATLE.

33. LERMOYEZ and HELME, after some introductory remarks upon the bactericidal action of nasal mucus, and upon the possibility of an infection originating at the site of operation, earnestly recommend aseptic as opposed to antiseptic procedures, the latter being dangerous on account of the great capacity for absorption that the mucous membrane exhibits. It is neither possible nor necessary for the physicians to undergo disinfection as for a laparotomy ; but he should proceed as the bacteriologists do who, without being themselves aseptic, yet work under perfectly aseptic conditions. Sometimes though, when direct manual manipulation is required, the hands should be carefully disinfected. As regards the disinfection of the patient, the auditory canal may be made aseptic (by Zaufal's method), but the nose and larynx cannot be. Irrigations into the latter are, in fact, pernicious, since they remove

the nasal mucus with its bactericidal properties. It is, however, absolutely necessary and quite possible to sterilize the instruments, and for this purpose the authors recommend hot air and steam rather than boiling water. For very delicate instruments a prolonged immersion in chloroform may suffice. The greatest difficulty in producing perfect sterilization occurs, as is well known, in the case of non-metallic instruments. Here the best thing to use is a Christmas' solution (carbolic acid 9 parts, lactic acid 2, salicylic acid 1, and menthol 0.1), which in double concentration disinfects tuberculous sputum in a few minutes, and yet does not injure mirrors even when they have been immersed in it for forty-eight hours. The authors also describe a syringe of their device, made of asbestos, and which can be subjected to boiling; and some other very practical forms of apparatus. For the sterilization of water they have had constructed a vessel of a capacity of forty litres, by means of which any desired quantity of water can be heated at any time and obtained free from germs. Cotton they make into small pear-shaped tampons and sterilize in a current of steam or upon a sand-bath, keeping them in tightly closed vessels from which they are removed with sterilized forceps. For use the tampons are rolled with the fingers (which must be made more or less aseptic), are moistened in an alcoholic solution of boric acid, and are heated in a flame until they just begin to char. In the concluding section the authors illustrate the necessity and usefulness of these minute aseptic precautions by detailing the history of 257 operations performed upon out-patients. The results are brilliant. [*Cf.* No. 73.]

G. ZIMMERMANN (Dresden).

34. ALT believes that in deafness which is completely or mainly unilateral, the psychic perceptivity for sonorous impressions may be lost altogether from disuse, and recommends that patients of this sort should carry on regular auditory exercises with the worse ear, the better one being occluded. KILLIAN.

35. GELLÉ says that the ear should be examined in every case of contracture of the sterno-cleido-mastoid or other muscles of the neck. Acute inflammations of the middle ear, which pass over into the mastoid cells (especially into those below and to the inner side), or produce glandular swelling, or result in cerebral complications, may be the cause of wry-neck; and the author states that he has observed the latter in sclerosis and in subacute forms of Ménière's vertigo. ZIMMERMANN.

36. GÉLLÉ, in 1890 (Berlin Congress) called attention to the occurrence of acute painful œdema of the face as a precursor of facial paralysis; he now describes analogous cases in which a circumauricular œdema constitutes the prominent symptom. This is always unilateral; diffuse and extending over the entire side, often indeed as far as the hyoid bone; hot and painful; and affecting particularly the lumen of the auditory canal. It likewise extends into the deeper parts, as proved by the development of vertigo and tinnitus. Swelling of the pharyngeal mucous membrane is a frequent concomitant. The œdemamay disappear in from eight to twelve days without leaving a trace behind, or may leave in some cases impairment of hearing, in others facial paralysis. In its etiology the affection may be either of nervous, constitutional (gouty), or infectious origin. It is not easy to differentiate the affection from inflammations of the Falloppian canal, inflammations of the external and middle ear, eczema, erysipelas, and mastoid disease. The occurrence of resolution on about the twelfth day is, however, pathognomonic of this form of primary œdema. Gellé has observed 11 cases, upon which he bases his description of this new form of disease.

37. RANDALL considers that this obstructive condition is almost invariably anterior, perhaps not extending anywhere near the tube mouths, and may be vasomotor rather than inflammatory. Hence, with the nose closed anteriorly, every swallowing effort made sucks the air from the tympanum and speedily renews a partial vacuum. The employment of cocaine can easily prove a snare. After gentle alkaline spraying and cleansing, an oil spray generally medicated with menthol camphor is used, and the surfaces lightly dusted with calomel. BACON.

39. The first case reported by BEADLES to the Pathological Society of London, was a patient who died in Colney Hatch Asylum; before death, discharge from left ear and swelling of left side of face. *Post-mortem:* Base of skull widely destroyed by a squamous-celled carcinoma, which had probably arisen from the left tympanic cavity. The second was a glandular carcinoma, which had probably arisen in the glandular epithelium of naso-pharynx. CHEATLE.

40. Specimen shown by TARGETT at Pathological Society, London, tumor about two inches in diameter, having histologically the structure of endothelioma containing nest-like bodies. Before death discharge of pus from left nostril. *Post-mortem:* Suppurative meningitis, growth having perforated floor of fossa.

INSTRUMENTS AND METHODS OF EXAMINATION AND TREATMENT.

41. PARK, J WALTER. A new and more convenient instrument than the Politzer air-bag for inflating the middle ear. *Annals of Ophth., Otol., and Rhinol.*, Jan., 1895.

42. RANDALL, B. A. The employment of the Eustachian catheter. *Phil. Polyclinic*, Jan. 12, 1895.

43. BERGEAT, H. Head-band of hard rubber for carrying a forehead mirror, etc. *Arch. f. Laryngol.*, vol. i., part 3.

44. BISHOP, S. S. A mastoid guide and separator. *Journ. Amer. Med. Assoc.*, Feb. 9, 1895.

45. PALMER, A. W. A frontal sinus drill. *N. Y. Med. Journ.*, March 2, 1895.

46. GOLDSTEIN, S. A modified bivalve nasal speculum, and a modified Bosworth nasal speculum. *Med. Record*, Feb. 9, 1895.

47. SPEAR, EDMUND D. A new nasal speculum. *N. Y. Med. Journ.*, Jan. 26, 1895.

48. KRETSCHMANN. An instrument for treating the larger forms of hypertrophied tonsils. *Münch. med. Wochenschr.*, No. 9, 1895.

49. URBANTSCHITSCH, V. Upon the influence of methodical exercise of the hearing upon the auditory sense. *Wien. mea. Presse*, No. 43, 1894.

50. GOLDSTEIN, M. A. The possibility of obtaining marked improvement in the treatment of deafness and supposed deaf-mutism by acoustic gymnastics. A system of vocal training of the auditory nerve, as advocated by Prof Urbantschitsch of Vienna. ARCH. OF OTOL., Jan., 1895.

51. MARPLE, W. B. Successful mechanical treatment of some unusual aural complications. *N. Y. Med. Journ.*, June 1, 1895.

52. JACKSON, CHEVALIER. An aural masseur. *Journ. Amer. Med. Assoc.*, May 14, 1895.

53. LESTER, JOHN C. An electric pressure-sound for the direct vibration of the membrana tympani. *N. Y. Med. Journ.*, June 8, 1895.

54. DENNIS, DAVID N. Injector of Delstanche with modified middle-ear tip. *Annals of Ophth. and Otol.*, April, 1895.

55. HEWETSON, H. B. Removal of adenoid vegetations with a description of a new curette. *Brit. Med. Journ.*, April 6, 1895.

56. CHEESEMAN, W. S. Pipette middle-ear syringe. *N. Y. Med. Journ.*, May 11, 1895.

57. HESSLER. Upon the operation for adenoid vegetations with Schütz's new pharyngo-tonsillotome. *Münch med. Wochenschr.*, No. 24, 1895.

58. FONCHER, A. A. A few modifications in the operating process of adenoid tumors. *Annals of Ophth. and Otol.*, April, 1895.

41. PARK's apparatus can be used only by those having an air tank. The nose-piece is made of hard rubber with a conical end for insertion in the nostril—on the other side can be attached a metal tip to fit any automatic cut-off attachment. BACON.

42. RANDALL finds that the indications for using the catheter are similar to those for inflation by the Politzer method ; but the catheter should be preferred in many unilateral cases, also when medication rather than mechanical inflation of the Eustachian tube and tympanum is required, and in the diagnostic study of the tubal condition, and especially in the treatment of the advanced and sclerotic cases in which the labyrinth is involved and politzerization generally makes the patient hear and feel worse. He uses 2 pure silver catheters 3 *mm.* and 2 *mm.*, respectively, in external diameter. Vapors can be used through the catheter, besides a spray and liquids. Of the medicinal vapors, he uses iodines ; as a spray, menthol-camphor in 1 % to 5 % solution ; and as a liquid injection, pure liquid pretrolatum with or without medication. BACON.

43. BERGEAT replaces the ordinary head-band by a perforated strip of hard rubber which is fitted to the surgeon's head by being applied to the latter warm and then left to cool *in situ*. Also in order to protect the head mirror from being soiled during its adjustment by the hand, he fits a lamina of metal to the periphery of the mirror and bends it over the edge of the latter. His third device consists in the use of unblacked aluminium as a mirror-frame. ZARNIKO.

44. BISHOP's instrument is devised to serve two purposes, *i. e.* both for operations on the external auditory canal and for those upon the mastoid process. The end of the handle is fashioned

into a periosteum-separator for the canal and is useful in Stacke's and other operations that require the separation of the integumentary canal from the bony meatus. BACON.

45. PALMER'S drill consists of a bur $4\frac{1}{2}$ *mm.* in diameter, which ends in a blunt probe-point. A curved cannula passes through the handle. The bur is connected by a cable, which passes through the cannula and the handle to another revolving handle behind the former. The instrument is worked by hand. TOEPLITZ.

46. GOLDSTEIN has modified the Duplay-Charrière's and the Bosworth specula so that they can be taken apart for cleansing. TOEPLITZ.

47. In SPEAR'S speculum the handles cross each other by means of a movable joint and one blade advances beyond the other. This arrangement allows the ala nasi to be held outward without a deep introduction of the blades. The more flattened blade is placed against the septum. TOEPLITZ.

48. KRETSCHMANN'S instrument, devised for removing the tonsils piecemeal, is shaped like Jurasz's forceps for removing adenoids, except that the cutting portions of the two sharp-edged rings, which fit into each other, are formed on the model of Krause's double curette. MÜLLER.

49. URBANTSCHITSCH reports upon the results of methodical exercises of the hearing made upon 60 inmates of the Lower Austria Deaf-and-Dumb Asylum. The hearing before the exercises were begun and that after they had been carried on for six months were as follows: (1) Ability to understand sentences, before, no case; after, 12 cases. (2) Ability to distinguish words, before, 6 cases; after, 16 cases. (3) Hearing limited to appreciation of vowel sounds, before, 22 cases; after, 21 cases. (4) Only traces of hearing present, before, 32 cases; after, 11 cases. POLLAK.

50. GOLDSTEIN describes the method as recommended by Urbantschitsch and says that "the gradual progression from vowel hearing to consonants, words, and finally the comprehension of entire sentences, is only possible by a diligent application of 'aural gymnastics.' Beneficial results from the use of this system are equally distributed, either in cases of congenital or acquired deafness" Urbantschitsch reports excellent success in cases of acquired deafness, sequelæ of cerebro-spinal meningitis, typhoid fever, scarlatina, measles, etc. BACON.

51. MARPLE reports three cases, in which he used the rubber splint or paper disc, as recommended by Blake.

The first case was one of chronic catarrhal otitis media, complicated by severe attacks of vertigo and occasional vomiting. The patient always referred to the vertigo as commencing in the right ear, and as coming on when the head was held in a certain position. She also complained of tinnitus on the right side. No relief followed treatment by inflation. The rubber spring or splint was introduced and placed against the short process in the right ear, as the symptom was considered due to some tension anomaly, probably some ligamentous laxness. She experienced great relief as long as the spring, or the paper disc which was substituted for it, remained in position.

The other two cases were those where disagreeable noises were complained of when certain musical notes were sounded in the vicinity. In one, the paper disc was used, and in the other, the rubber spring. Marple quotes Dr. F. S. Lee, who has made elaborate investigation as to the function of the semicircular canals in fishes, as giving his opinion that, reasoning from his observations in fishes, one could locate with probability the lesion, if it was in the semicircular canals, by the direction in which the patient seemed to be falling during the attack of vertigo. In the writer's case, as the motion seemed to be circular, it would seem to indicate, according to Lee, that no one semicircular canal alone was disturbed, but all, or, possibly, the otolithic parts. This disturbance in the labyrinthine pressure might be produced by a minute movement of the ossicular chain attending a tilting of the head if the articular ligaments were loose.

BACON.

52. In JACKSON'S masseur, motion is imparted to the masseur by a small electric motor run by a battery or storage cell. A rubber tube leads from the bottom of the cylinder and ends in an ear-piece to be inserted in the external auditory meatus. The author claims to have obtained better results with this instrument than with the injector of Delstanche and Siegle's otoscope.

BACON.

53. LESTER gives a description with illustrations, of this instrument which he has devised (viz., a motor with pressure sound attached). The short process of the malleus is selected as the point of contact, and the probe is introduced through a speculum and held in position. The vibrations range from five hundred to

fifteen hundred or more a minute. In the cases thus far treated, the best results have been obtained by a minimum length or extent of vibrations and a maximum number of vibrations. The duration of treatment varies, the average being from three to ten seconds at each sitting, and should be repeated from two to three times a week. The writer claims that this instrument is of especial value in cases of sclerosis and in atrophic conditions by virtue of its action in increasing the vascularity and hence the nutrition of the part. BACON.

55. For removal of adenoids, HEWETSON advocates the patient lying flat with head rolled over towards operator on the right, and uses a modification of Hartmann's curette; the modification presents a semicircular scraping double edge, and which can, by an alteration of pressure, be made to scrape with its presenting curve upwards, backwards, and even downwards. It is blunt towards the soft palate, and is set at an obtuse angle on the shaft.

CHEATLE.

56. CHEESEMAN'S instrument is similar to Buck's glass pipette, except that the writer has substituted hard rubber for the glass, with an ordinary pipette bulb and a fine flexible rubber tip, curved slightly at the end for ready introduction into perforations.

BACON.

57. In Schütz's new instrument, both knife and traction-spring are made of elastic steel, and are connected with the traction-bar by a simple crotchet. The price has been reduced from forty-five to twenty-five marks. Hemorrhage, according to HESSLER, is usually slight, and secondary hemorrhage is rare. The administration of an anæsthetic is commonly not required, nor is any local after-treatment necessary. In about 5 per cent. of the cases there was a suspicion of tuberculosis In these the cure was preceded in several instances by symptoms of general infection (swelling of the cervical lymphatic glands, fever, etc.).

MÜLLER.

58. FONCHER devises for the operation upon adenoids a combined mouth-gag and tongue-depressor, which is constructed like the O'Dwyer-Denhard mouth-gag, but the lower blade consists of a tongue-spatula, the upper serving for insertion into the upper teeth. The difficulties encountered by Foncher in operating on struggling patients, can be much better overcome by narcosis than by this instrument, which will facilitate the breaking of the front teeth. Foncher also modified the Gottstein curette, or rather its

Higguet-Munger's indented form, by furnishing it with a handle set at right angles, as in Mackenzie's tonsillotome.

TOEPLITZ.

EXTERNAL EAR.

59. GIRARD. Upon a peculiar malformation of the ears. *Correspbl. f. Schweizer Aerzte*, 1895, p. 151.

60. BURGER, H. Congenital malformation of the auricle and otoplasty. *Niederl. tydschrieft, v. Geneesk*, May 5, 1894.

61. HOLLINGER, J. An unusual case of aural deformity. Operation. *Annals of Ophth. and Otol.*, April, 1895.

62. GROVE, H. N. An artificial auricle. *Lancet*, Feb. 2, 1895.

63. SMITH, S. MACCUEN. Furunculosis of the external auditory canal. *Med. News*, Jan. 19, 1895.

64. HERZOG, MAXIMILIAN. Verticillium Graphii as the cause of an obstinate otitis externa diffusa. ARCHIVES OF OTOLOGY, Jan., 1895.

65. HIGHET, H. C. Otomycosis. *Br. Med. Journ.*, March 9, 1895.

66. LEDERMAN, M. D. Diffuse external otitis. *N. Y. Med. Journ.*, May 18, 1895.

67. LEDERMAN, M. D. Foreign bodies in the ear and nose. *Annals of Ophth. and Otol.*, April, 1895.

68. WEISSENSTEIN. Foreign bodies in the ear. *Würtb. med. Corresp.-Blatt*, No. 14, 1895.

69. CORRADI. Obstinate stenoses of the cartilaginous portion of the external auditory canals, and their treatment. *Annales des mal. de l'oreille*, etc., No. 4, 1895.

70. LANNOIS. Rupture of the tympanum in a man who had been hanged. *Ib.*, No. 6, 1895.

59. In the family of the patient that GIRARD presented there was an hereditary malformation which this author calls "hunting-dog's ear." In this the upper part of the auricle is very greatly prolonged and hangs down in a flap so as to conceal the entrance to the meatus. In one ear the lobule was rudimentary. Otherwise, and except for a general thinning of the cartilage, which would in part account for the anomaly, the auricle was well formed. Girard operated with success upon the brother of

the patient exhibited; excising a portion of skin at the retro-auricular margin, so as to be able to attach the auricle closer to the head, and then diminishing the size of the overgrown auricle by means of semilunar incisions, which, however, did not encroach upon the helix. The author believes that it would be a good plan to use a hood for small children, for those at least who show an hereditary tendency to the development of spreading ears. SIEBENMANN.

60. BURGER operated upon two cases of the deformity called "cat's-ear." In one case the external auditory canal was entirely undeveloped, in the other was rudimentary. The upper end of the auricle, which in these cases is adherent below and in front of the auditory canal, was dissected off, reflected up 180°, and attached in its new position. POSTHUMUS MEYJES.

61. HOLLINGER'S case was one where the whole head was asymmetric; the left side of the face was inferior to the right in all dimensions, and showed a marked depression which extended from the ramus of the lower maxilla to the linea temporalis, and from the zygoma to the occipital region. The lobule was smaller than usual. The line of insertion of the auricle formed three quarters of a circle, and the free margin of the auricle was bent upon itself forward and at an acute angle. The tragus was missing. The auricle was corrected, half of the auricle was dissected from its broad attachment and sewed to an incision in the vertical prolongation of the still adherent part. The result was a small vertical cicatrix in front of the ear and a somewhat pointed ear. BACON.

62. To the dental surgeon GROVE praise is due for the following careful and ingenious method for making and fixing an artificial auricle. A plaster cast is first taken of the side of the head, on which an auricle is built up in wax to match the healthy auricle; from this wax model an auricle is made in vulcanite and aluminum, tinted and enamelled to harmonize with complexion. Adhesion to head effected by means of a saturated solution of mastic in absolute alcohol. CHEATLE.

63. SMITH uses camphor-phenol applied locally to abort a furuncle, and from an experience extending over more than eight years, feels justified in recommending it. An ointment of yellow mercurous oxide gr. ½ – 3 i. can be substituted for the camphor-phenol as soon as inflammation begins to subside. He employs other measures in different cases, such as blood-letting, antiseptic

irrigation of the canal, and dry cold. He avoids poultices, and gives tonics and alteratives, and especially Fowler's solution of arsenic. When an operation is necessary he makes a free incision through the furuncle. BACON.

64. HERZOG reports a case of diffuse otitis externa of a very obstinate nature in which he obtained a pure culture of the mould. He refers to the literature of the subject, and reports a cure in his case from the instillation of a 4 per cent. solution of salicylic acid in alcohol, being the treatment proposed by Bezold.

BACON.

65. HIGHET considers otomycosis the most frequent affection of the external meatus in Singapore; he lays special stress upon the fact of its frequency compared with Europe. Chief factor being sea-bathing. Complications being: diffuse inflammation of external meatus, acute and chronic serous catarrh of middle ear, perforation of membrane, swelling and suppuration of glands, eczema of meatus and pinna. Treatment: thorough clearing, and local applications of solution of perchloride of mercury in rectified spirit 1:1000. CHEATLE.

66. The patient, a female, aged twenty-three years, on account of intense itching in both auditory canals, syringed the ears with a strong solution of carbolic acid, causing a diffuse otitis externa, and when first seen by LEDERMAN two days later, the face was very puffy, owing to a serous infiltration, which had extended over the malar and external infraorbital regions. The conjunctiva of both eyes was much infected. Diffuse swelling of both auricles existed, and on the left side the swelling extended over the angle of the jaw. Serum filled the fossæ of the auricles and exuded from beneath a pseudo-membrane. The watch could not be heard with either ear. The patient made a good recovery.

BACON.

68. WEISSENSTEIN, after treating minutely of the whole subject of foreign bodies in their clinical, anatomical, and therapeutical aspects, reports the case of an eight-year-old girl whose auditory canal, when she came under observation, was greatly narrowed by inflammatory swelling. When the canal was syringed the water passed into the naso-pharynx. Instillations of an alcoholic solution of boric acid were prescribed at first, but, as the otorrhœa increased and pain developed behind the ear and over the vertex, the patient was anæsthetized, and the auricle and auditory canal were detached and turned forward. The foreign

body—a quadrangular piece of glass which for the most part lay in the tympanic cavity—was removed without injury to the bony portion of the external wall of the tympanum. The wound healed kindly, the secretion ceased in five weeks, and hearing became normal. A stenosis of the canal at the junction of the bony and cartilaginous portions disappeared almost completely.

MÜLLER.

69. In CORRADI's first case there was moderate stenosis in the cartilaginous meatus with otorrhœa produced by a gun-shot wound of the posterior wall of the canal. Attempts at dilatation without cutting made matters worse to such an extent that the canal scarcely admitted a pin's head, and severe symptoms of retention set in. A circular incision was then made, and drainage effected down to the antrum. Subsequent dilatation with laminaria tents was required and ultimately a cure was effected. In the second case there was erysipelas which produced an otorrhœa, recurred fifteen times during the year, and finally left a permanent thickening of the soft parts of the right side of the face and narrowing of the lumen of the left auditory canal. This latter depended, not so much upon an increase in the thickness of the tissues as an increase in their length, so that when the speculum was withdrawn the parts could be seen to telescope into each other. A segment about 0.5 *cm* wide was resected and a tampon of iodoform gauze inserted which afterwards was replaced by a drainage tube. The condition was cured, although the discharge from the middle ear persisted. ZIMMERMANN.

70. LANNOIS examined a man who had been hanged, and found, besides marked cyanosis of the face, ecchymosis of the left conjunctiva, fracture of the hyoid bone, and hemorrhage into the pia mater, an oval rupture in the postero-inferior quadrant with reddened margins, and punctate hemorrhages and reddening of the tympanic mucous membrane. ZIMMERMANN.

MIDDLE EAR.

71. WHITE, F. Complete deafness for twenty-four years from Eustachian closure ; perfect recovery after a course of politzerization. *Brit. Med. Journ.*, March 2, 1895.

72. HEFLEBOWER, R. C. Clonic spasm of the tensor tympani. *N. Y. Med. Journ*, March 16, 1895.

73. LERMOYEZ and HELME. The staphylococci of otorrhœa. *Ann. des mal. de l'oreille, du lar., et du phar.*, Jan., 1895.

74. Pes and Gradenigo. Pyogenic staphylococci in acute and chronic otitis media, and the method of treating the latter. *Ibid.*, 1895.

75. Hamon du Fougeray. Antiseptic treatment of chronic simple suppurations of the tympanum. *Annales de mal. de l'oreille, etc.*, No. 6, 1895.

76. Meyjes, Posthumus. The treatment of acute infection of the middle ear. *Med. Weekblad von Noord and Zuid Nederland*, June 9, 1894.

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80. Nichols, J. E. H. Otitis in small children. *Ib.*, May 1, 1895.

81. Bishop, S. S. Acute catarrh of the ear of an epidemic character. *Med. and Surg. Reporter*, April 27, 1895.

82. Kutscher. Upon the etiology of a case of otitis media developing in the course of a pharyngeal diphtheria. *Deutsche med. Wochenschr.*, No. 10, 1895.

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86. Okuneff, W. N. Upon the employment of trichloracetic acid in chronic purulent inflammations of the middle ear. *Monatsschr. f. Ohrenheilk.*, No. 1, 1895.

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90. STETTER. Annual report of the Dispensary for Diseases of the Ear, Nose, Throat, and Mouth. [Remarks on Wilde's incision.] *Monatsschr. f. Ohrenheilk*, No. 24, 1895.

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93. ZAUFAL, E. Upon dermoplasty combined with the radical operation for exposing the tympanic cavity. *Prag. med. Wochenschr.*, No. 16, 1895.

94. HEFLEBOWER, R. C. The removal of the auditory ossicles for the relief of chronic deafness and other abnormal conditions. *Bost. Med. and Surg. Journ.*, Jan. 31, 1895.

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96. JACK, F. L. Remarks on stapedectomy. *Bost. Med. and Surg. Journ.*, Jan. 10, 1895.

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120. THOMAS, J. L., and PURVIS, W. P. Cerebellar abscess following middle-ear suppuration with polypus in external meatus. *Lancet*, May 18, 1895.

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123. JOEL. Contributions to the surgery of the brain. *Deut. med. Wochenschr.*, No. 8, 1895.

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125. MORTON, C. A. A case of otitic pyæmia. *Brit. Med. Journ.*, Jan. 5, 1895.

126. DEANESLY, E. A case of aural pyæmia without sinus-thrombosis treated by ligature of the internal jugular vein and plugging of the lateral sinus. *Ibid.*, April 13, 1895.

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128. GOLDSTEIN, M. A. Exfoliation of the cochlea, vestibule, and semicircular canals. *Annals of Ophth. and Otol.*, April, 1895.

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71. WHITE relates a case of a female, aged thirty-five years, deaf since nine years old; nothing heard at either meatus. Politzerization daily, hearing normal in three months, with marked increase in mental powers. Before treatment patient good lip-reader, and could make use of limited number of words; on establishment of hearing, conversation by the lips not understood at all. CHEATLE.

72. HEFLEBOWER reports a case of a woman aged thirty-five years, married, who was in excellent health. In the right ear there was a large perforation and chronic discharge, which ceased under four weeks' treatment, and the perforation became much

smaller. The hearing distance for the watch was one inch. The drum-membrane in the left ear was somewhat lax, and hearing distance for watch sixteen inches. The patient sought advice on account of a clicking noise in the ears which had persisted for several years and which was accompanied by a twitching of the muscles of the throat. It was worse on exertion, sudden fright, and during menstruation. On observing the drumheads, no movement could be discovered in the right ear, although the clicking noise could be faintly heard. In the left ear, a very perceptible indrawing of the central and lower part of the membrane could be seen at the time of each click; the muscles of the soft palate contracted synchronously with the tensor tympani. The writer thinks that this affection (clonic spasm of the tensor tympani) has all the characteristics of a chorea minor. [*Cf.* No. 17, *supra.*] BACON.

73. The bacteriological investigations of LERMOYEZ and HELME seem to show that the majority of acute inflammations of the middle ear are due solely to micro-organisms. The organisms most frequently found are streptococci and pneumococci. Other micro-organisms, it is true, are associated with these, but they do not put in an appearance—and this is a very important fact—until the drum-membrane is perforated. According to these authors the presence of staphylococci is a proof that the affection is going to be a chronic one. Staphylococci do not enter the tympanum from the Eustachian tube, but only from the auditory canal, and, while they may have been present in the latter from the first, they are usually introduced with the instruments or dressings, and particularly with cotton. The latter should, therefore, be well sterilized, and in order to do this the authors recommend that the cotton-holder, each time that it is freshly charged, be dipped into an alcoholic solution of boric acid and then ignited. The cotton is thus sterilized without losing its hygroscopic qualities. [*Cf.* No. 33, *supra.*]

74. PES and GRADENIGO oppose Lermoyez and Helme's theory in all points. Against the assumption of the latter authors that staphylococci occur only as a secondary phenomenon in the tympanum, they allege that they do occur primarily even when the drum-membrane has not been opened, and quite as often indeed as do the diplococci and streptococci. In refutation of the statement that staphylococci can enter the tympanum only through the external canal they adduce a case in which the latter was kept

perfectly free from micro-organisms and yet staphylococci developed. Third, in opposition to Lermoyez and Helme's belief that the presence of staphylococci is the chief cause of chronicity, they point out the fact that Zaufal and others have shown that in markedly chronic cases the most different kinds of micro-organisms may be found. Chronicity, in fact, depends less upon the kind of micro-organism present than upon certain constitutional and local causes. Among the latter are obstacles to the discharge of pus, the persistence of inflammation in the naso-pharynx and external canal, and the mastoid complications. Lastly, the mode of infection which Lermoyez and Helme regard as so frequent, namely, that by the introduction of cotton into the canal, they say cannot occur if the otologist is scientific and knows his business. Besides, the cotton tampon is rarely carried into the canal as far as the drum-membrane, and the cotton used by the patient himself usually contains nothing but saprophytes. In conclusion, the authors give a synopsis of the results obtained in their acute cases which have been treated exclusively by means of tampons of iodoform gauze. Comparison of these statistics with others cannot be made because the latter do not give precise data as regards the duration of the disease from the first appearance of the pain to the disappearance of secretion. In their 167 cases perforation occurred in 96. Of these 49 could be followed until a cure took place, which was on an average in 14 days. Mastoid and endocranial complications occurred in 6.2 per cent. Among the latter was an unusually rapid form of meningitis, which ended fatally in 24 hours.

The paper is suggestive, and well worth reading.

ZIMMERMANN.

75. HAMON DU FOUGERAY describes his method of treating chronic purulent otitis media. This is based upon Lermoyez and Helme's theories (see No. 73, *supra*), and consists in the insertion of a tampon of iodoform gauze into the canal after preliminary cleansing of the latter with sterilized cotton. ZIMMERMANN.

76. POSTHUMUS MEYJES believes that in acute otitis media neither injections into the external canal nor politzerization should be used. All that is necessary is to instill antiseptics (sublimate) when the membrane becomes perforated spontaneously or when paracentesis (which should be performed as early as possible) has resulted in the production of much secretion. Politzerization may, however, be performed at the end of the second week, if the

hearing has not by that time become normal. The fact that no mastoid complications, apart from slight inflammation readily cured by the application of iodine and a cotton dressing, were seen by him among the several hundred cases that he treated he ascribes to this abstinence from the use of inflations and the syringe. POSTHUMUS MEYJES.

77. NICHOLS believes that in suppurative otitis media the secretions should be removed as soon as formed. He uses to cleanse the ear a suitable syringe and peroxide of hydrogen solution. The ears should be inspected in the early stage at least twice a week, until the bad symptoms are relieved. A small perforation in the drumhead should be enlarged to afford proper drainage. A curette should be used to remove granulations, necrosed tissue, etc., and caustics of moderate strength should be subsequently applied. As astringents, he recommends alumnol and absolute alcohol. Europhene and iodoform he considers objectionable. Proper treatment should be directed to the nose and naso-pharynx. BACON.

78. MÜLLER recommends early paracentesis in all inflammations of the middle ear that are not complicated by general diseases, such as tuberculosis and diabetes. He holds that it exerts an antiphlogistic, anodyne, and abortive action. POLLAK.

79. DENCH refers to the symptoms of acute otitis in children, and considers pain the most prominent. Local abstraction of blood by means of the wet cup is most important when pain is due to inflammation of the middle or external ear. The patient should at the same time be kept in bed and purged. Opiates are sometimes necessary, and he recommends dry heat instead of moist heat. After the discharge appears, antiseptic irrigations are necessary. The quantity of the discharge should not be diminished till the temperature has become normal and all pain has disappeared. When there is tenderness behind the ear, he uses an ice-bag, but never longer than forty-eight hours at a time Tumefaction, whether of the canal or caused by displacement of the membrana tympani, when associated with a history of pain, is sufficient to warrant a free incision. BACON.

80. NICHOLS says that in children chronic rhinitis of the catarrhal variety is most common. Before cleansing the nares, the child should be turned on its face, and a little 2 per cent. solution of cocaine sprayed into each nostril. An olive-shaped nozzle from a fountain-syringe should be introduced into one

nostril, and a 2-per-cent. solution of boric acid used. This treatment should be carried out in the exanthemata. Digital examination will show the presence of adenoids. BACON.

81. During the epidemics of influenza, BISHOP observed that the aural complications usually appear about the fifth day after the seizure. The pain is intense. Within twelve or twenty-four hours effusion of serum occurs. The proportion of cases in which there is a mastoid involvement is vastly larger than in simple acute otitis media. The tendency to suppuration is far greater also. The constitutional disturbance is more profound and the disease less easily controlled. BACON.

82. KUTSCHER succeeded in obtaining an almost pure culture of diphtheria bacilli from the pus derived from the ear of a boy suffering from laryngeal and pharyngeal diphtheria, and thinks that there is no doubt but that these bacilli were the cause of the otorrhœa. NOLTENIUS.

83. GURANOWSKI gives a systematic presentation of the subject of tuberculous inflammations of the middle ear, based upon several cases that he observed himself and upon an exhaustive review of the literature. In the matter of diagnosis he lays special stress upon the painlessness with which the perforations of the drum-membrane develop, upon the rapidity with which destruction of the whole membrane and caries of the ossicles and mastoid follow, upon the presence of bacilli in the discharge from the ear, and upon the simultaneous involvement of other organs. The latter feature was entirely absent at first in one of the author's cases, so that the tuberculosis here apparently originated in the ear. KILLIAN.

84. DENCH lays great stress on the importance of making an early incision in the drumhead, as the discharge is apt to be of much shorter duration when this is done. The ear should be kept clean by irrigation, and cold applications should be used in the early stage of mastoid inflammation, but should not be continued longer than forty-eight hours. The mastoid cells should be opened when pus has formed. BACON.

85. In BERNSTEIN'S experience the present epidemic of grip has been unusually prolific of serious secondary diseases of the ear. Chief characteristics are intense hyperæmia and pain disproportionate to the conditions usually seen. During an attack of the grip or convalescence from it, typical symptoms of acute gastric catarrh supervene, viz., headache, nausea, foul breath,

furred tongue, and great discomfort. After several such days, the ear begins to discharge; great tenderness over mastoid and tragus develops. The case may now progress favorably as regards pain, or the latter, after a short remission, may again become severe and we then have a regular mastoiditis. BACON.

86. OKUNEFF, after preliminary cocainization, applies crystalline trichloracetic acid, and then syringes the ear out. By repeated applications of this sort he has succeeded in checking the discharge in 38 out of 42 cases of chronic otorrhœa, and in more than half the cases has produced cicatrization of the perforation in the membrana tympani. KILLIAN.

88. STEWART lays great stress upon the importance of going to the seat of the disease and not merely treating the case by the instillations of astringent solutions and the removal of granulations. When the ossicles are carious, they should be removed, and each case should be treated on true surgical principles.

BACON.

89. RIPAULT and DEMOULIN illustrate by means of several cases, two of which are described *in extenso*, not only the uselessness of the simple Wilde's incision, but also the danger of secondary infection that it may give rise to. In one case subcutaneous fistulæ and peripheral facial paralysis developed; in the other case, besides fistulæ leading down to the mastoid process, which was bare, and to the occipital bone, a fistula was formed communicating with the lateral joint of the atlas and necessitating resection of the arch of the vertebra. Both cases ultimately got well.

ZIMMERMANN.

90. STETTER recommends Wilde's incision as the first operative procedure to be employed in all cases of periostitis of the mastoid following acute or chronic suppuration of the middle ear. It may effect a cure even in cases with meningeal irritation. It is only in cases where the bone itself shows changes that the antrum is to be opened immediately; otherwise this latter operation may be put off and in many cases will not have to be performed at all. KILLIAN.

91. In this paper, SEAMAN does not go into detail in regard to the treatment of chronic purulent otitis media, but urges the importance of recognizing the necessity of such treatment when it exists, and points out briefly the dangerous sequelæ which are sooner or later liable to arise. He refers to several writers on this subject and the indications for operating. BACON.

92. In this article, HARTMANN reviews the methods of operating as recommended by Küster, von Bergmann, Zaufal, and others, and gives the results of measurements made by himself, of specimens which consisted of horizontal sections of macerated temporal bones. He concludes the paper by saying that "the operation of exposing the cupola-space and the antrum is less dangerous than a chiselling of the mastoid as it used to be done, and, moreover, it is the only operation that can with certainty effect a cure of a middle-ear suppuration which is not relieved by the other means mentioned above." BACON.

93. ZAUFAL reports upon five cases operated upon by Körner's method, and from the results so far obtained is led to declare that he will employ it from now on in conjunction with free exposure of the tympanic cavity in all suitable cases. POLLAK.

94. HEFLEBOWER believes this operation is indicated in deafness as well as headache, vertigo, tinnitus, etc., accompanying this condition, and in adhesions, and chronic suppuration from the middle-ear, especially when the ossicles are necrotic. BACON.

95. As a result of massage, the hearing has improved and the tinnitus has been relieved in over 90 per cent. of LAUTERBACH'S cases of non-suppurative disease. In about half of the cases, this method of treatment has removed the vertiginous symptoms. The writer does not think that the ossicles should be removed until the patient has been under treatment for at least three months, and during this time massage and other necessary treatment should be tried. In case of failure, then an operation.

BACON.

96. JACK concludes his paper, in considering the results of a personal experience for the last two years, by saying:

(1) That the best results in hearing have been obtained in cases of early removal of the bone, and that the operation is of little use in cases of otitis media insidiosa (sclerosis).

(2) That cases of chronic aural vertigo have been permanently relieved by liberation of the stapes or by extraction of the bone itself.

(3) That in cases of non-suppurative disease of the middle ear, as well as the class of cases the result of a chronic suppurative process, surgical mobilization should first be tried before an attempt is made to remove the stapes.

(4) That most operations for mobilizing the stapes or freeing the oval window must be looked upon as largely experimental,

and that in many cases a fracture of the crura occurs at the time of attempted extraction, leaving the base plate. BACON.

97. BISHOP presented a patient who had had the drumhead and malleus removed by a surgeon two years previously, but no improvement in either the hearing or tinnitus followed. He believes there are certain cases that can be benefited by this operation, viz., those in which the perceptive organ is not involved and where the loss of hearing is due entirely to the diseased condition of the conducting apparatus. BACON.

98. BUCK gives a short resumé of the 10 cases of mastoid disease occurring in diabetes that have so far been reported. Of this number, which includes 2 of his own, 7 were operated upon ; and of these, 5 died. Buck now adds 4 cases of his own, which were all operated upon ; 2 of the number dying, one of diabetic coma, the other of sinus-phlebitis. Buck is convinced that subsequent statistics ought to give a better prognosis, since it is to be anticipated that, in the future, operations will be performed at a comparatively early stage of the disease,—certainly before the sinus or dura has become implicated. In almost all the cases so far known the operation was performed comparatively late.

MÜLLER.

99. BROCA and LUBET-BARBON [in a work already reviewed in these ARCHIVES (April, 1895)] give a very precise account of everything that recent investigations have afforded as to inflammations of the mastoid. The work is based upon a material of 128 cases, with 143 operations performed for acute and chronic suppuration (other affections, such as cholesteatoma, being excluded from consideration). The pathologico-anatomical observations of the two authors, *e. g.*, that almost every acute otitis is accompanied by a mastoiditis, that in the production of the latter the antrum plays a very important part, etc., are in conformity with the statements which we usually find in German works.

In considering the passages by which the pus is propagated, the authors discuss at length those varieties of periostitis which extend from the middle ear along the auditory canal and, without involving the pneumatic cells, affect the mastoid directly.

That there is an osteomyelitis similar to that which occurs in the long bones they do not believe. Very suggestive are the various points collected in the section on diagnosis and that are important for the differentiation of the various lesions. With regard to the possibility of the development of a suppuration of

the mastoid which is not produced by an antecedent inflammation of the middle ear, the authors profess themselves as very sceptical, although two cases that they record show that there may be a condensing ostitis of the mastoid of apparently spontaneous origin. The section upon therapeutics is very definite in its prescriptions ; trephining is recommended in the acute forms, the simple Wilde's incision being in their opinion only palliative. In the chronic forms they regard a free exposure of the antrum and aditus as invariably required. The methods themselves are minutely described and, as in the case of the whole work, are illustrated by instructive histories of cases. A comprehensive statistical presentation of the material that has come under their own observation concludes this instructive treatise.

ZIMMERMANN.

100. In STOUT's first case an opening was found in the mastoid, size of small pin-head. This was enlarged and abscess cavity cleaned of pus and granulations. The patient made a good recovery. In the second case, rupture of the abscess occurred in the digastric fossa, causing an abscess in the neck. Pressure on the latter caused the pus to well up through the opening in the mastoid. An operation was performed, and the patient was cured. BACON.

101. SMITH has seen during the past few months 11 cases of mastoid empyema resulting from acute otitis media. The ages of the patients varied from nine months to forty-four years. In 4 cases the abscess was superficial ; of the remaining cases, in 5 the disease was confined to the antrum, while in 2 the mastoid cells were involved as well. The writer lays great stress on the early recognition and prompt treatment of all acute diseases of the ear, thus preventing mastoid complications. BACON.

102. In BAKER's case, acute purulent otitis media was due to snuffing up cold water from the palm of the hand, some entering the Eustachian tube and tympanum. It became necessary to open the mastoid cells subsequently. BACON.

103. FETTEROLF's patient, aged thirty, a female, had an attack of acute coryza, lasting about three weeks, at the end of which time she had violent pain in the left ear. A month later she came under observation, complaining of pain and tenderness over the left mastoid. Several weeks later, it was necessary to make an incision down to the bone to evacuate about 15 *cc.* of pus. Careful probing failed to reveal denuded bone or a sinus. In two weeks the patient recovered. BACON.

104. ROBERTS reports a case of purulent otitis media of eight weeks' standing, followed by mastoid disease, in which it was necessary to open the mastoid cells and to remove a portion of softened bone. The lateral sinus was exposed, and considerable hemorrhage followed, but this was checked by packing the opening with bichloride gauze. The wound was entirely healed in six weeks. The case serves, in the author's opinion, "to illustrate the power of nature in a fairly healthy constitution, to withstand the ravages of diseased action in the vicinity of vital organs, and the hopeful outlook we may entertain as to a result of radical operations conducted in accordance with well-established surgical principles and under careful antiseptic precautions." BACON.

105. BACON'S patient, a little girl, two years of age, was shown before the Society of the Alumni of Bellevue Hospital. She was first seen Nov. 9, 1894. The right ear had begun to discharge nineteen months before, and four months ago a swelling had suddenly appeared behind the ear, and had subsequently ruptured spontaneously. An incision was made down to the bone, just behind the attachment of the auricle, and a sequestrum about an inch by three quarters of an inch in size, was removed. The entire cavity was scraped, and many unhealthy granulations were removed with the curette. The wound healed rapidly.

BACON.

106. BACON'S patient, a boy aged ten, came to the Infirmary Nov. 4, 1894, having a careworn, anxious appearance, cold hands, pulse full and bounding and more rapid than normal. He complained of great pain in the mastoid (left), and he heard the watch on that side by contact only. The auricle stood out prominently, and there was decided fluctuation over the mastoid process. The left membrana tympani was dullish red and macerated. He had a temperature of 103° F. The boy was immediately etherized, and the post-aural abscess opened, giving exit to about a drachm of pus. The mastoid was then opened, and pus and softened bone removed as far as the tip. The lateral sinus was found normal, but pus was observed coming from the middle cranial fossa, so that it was necessary to cut away a considerable area of bone about the antrum and above it to explore the dura. The latter was found thickened, but no pus was discovered in the brain itself by means of an exploring needle. The pus had evidently forced its way into the middle cranial fossa through a small perforation in the upper wall of the middle ear, although none could

be detected. The wound healed rapidly, and the boy made an excellent recovery. BACON.

107. LAKE, at a meeting of the British Laryngological, Rhinological, and Otological Society, draws attention to facial paralysis in recent otitis media, reporting 4 cases among 658 cases of recent otitis seen at St. Thomas's Hospital. CHEATLE.

108. POLLAK reports a case of the spontaneous rupture of a cerebral abscess into the cavity produced by the performance of a typical mastoid operation. The symptoms upon which the diagnosis of an abscess in the right temporal lobe was made were: Unconsciousness, paralysis of the left upper and lower extremities, Cheyne-Stokes's breathing, left facial paresis, bilateral immobility of the pupils with mydriasis, and moderate ptosis of the right eyelid. These symptoms disappeared after the rupture of the abscess. The patient recovered completely. Pollak, in cases of this sort in which there is even a suspicion of the presence of an abscess in the temporal lobe, advises that in the performance of the mastoid operation the dura over the tegmen mastoideum should be exposed, and an exploratory incision made through it. POLLAK.

109. EULENSTEIN'S paper is a statistical summary of the 18 cases so far known of cerebral abscess developing after acute inflammation of the ear or of the temporal bone, and a detailed description of a case which he himself observed. The main facts in regard to the latter are as follows: A man, forty-five years of age, had, as the result of influenza, an acute attack of isolated inflammation of the right mastoid. This was chiselled. The excruciating headache in the right side of the head, however, persisted, and after five weeks increased, together with the development of singultus, weakness, and diminution of tactile sensibility and temperature sense in the left arm and leg, which also became colder to the touch, and diminution of hearing on the left side. No somnolence nor fever. Later, facial paresis and vomiting. Operation. Large abscess of temporal lobe. Subsequently return of the symptoms owing to retention of pus. Re-opening. Recovery. KILLIAN.

110. PARK reports a case under this heading and draws the following conclusions:

(1) That we may have optic neuritis in the early stages of acute purulent inflammation of the middle ear and that the ophthalmoscope should be used in all acute and chronic cases of otitis media.

(2) That symptoms simulating cerebral abscess and sinus-thrombosis may be produced by direct septic infection from the middle ear.

(3) That one should establish thorough drainage in all acute cases, and that if after the acute symptoms have subsided, and all treatment is of no avail, and the purulent discharge is not arrested, should curette the tympanic cavity, by which means, in most cases, further infection is prevented.

(4) That when there are symptoms simulating cerebral abscess, etc., as in this case, errors of diagnosis are liable to occur, and as a precautionary measure one should first curette and clean out all carious and necrosed ossicles and diseased adventitious matter. No further operative measures may be required. But if cerebral complications are still present, we should open the mastoid regardless of whether it is tender upon pressure or not, and if this is of no avail, then open the skull as per indication of symptoms. BACON.

111. HAUSBERG begins his paper with a history of the operation of trephining the skull for cerebral abscesses of otitic origin, and refers to the investigations in this field and the various operations performed by surgeons from time to time. He refers to measurements made by himself and to the dangers of the operation; also to the symptoms of cerebral abscess both from a clinical and physiological standpoint, and reports a case of subdural abscess which came under his observation. He describes the different steps in the operation of trephining, and concludes his paper by a reference to abscesses in the cerebellum.

BACON.

112. Moss reports two cases, one being a female patient, aged twenty-seven, who had, six weeks before observation, had measles, followed by a suppuration of the ear and mastoid disease, and further complicated with sinus-thrombosis. The patient was operated upon and recovered. The second case was that of a female, aged fifty-one, who had mastoid sclerosis and a cerebral abscess. An operation was performed, but the patient died. No post-mortem. BACON.

113. In GRÜNEWALD'S patient, aged forty-three, swelling and diffuse inflammation of the right external canal set in but soon abated. After the patient had been apparently well for five weeks, there developed headache with tenderness and swelling behind the right ear. This was incised and pus evacuated from

a cavity involving the whole mastoid process. This was laid freely open. Three weeks later renewed headache, chills, and tenderness over the right internal jugular vein. Second operation with removal of the whole bony covering of the mastoid process. Fourteen days later left facial paralysis followed by paresis of the whole left half of the body, and general torpor and apathy. Trephining and repeated punctures of the brain made without result. Three days later a second trephining, which was also without result. A few days afterwards the patient died. The autopsy showed an abscess as large as a hen's egg, and with a firm membranous envelope in the right temporal lobe. Dura over the tegmen tympani grayish-red, the bone in the same situation porous and yellowish. The striking feature of the case was the entire absence of discharge from the middle ear. Extension to the brain obviously took place through the lymphatic channels in the tegmen tympani. MÜLLER.

114. CARSON in his surgical practice has observed nine cases of abscess of the brain within a period extending a little over three years, and of this number eight resulted from disease of the middle ear. Of these cases he gives the notes of one. In this case, he opened the mastoid antrum on account of a chronic suppurative otitis media of several years' duration, in a lad of fifteen years. For the preceding two weeks he had had severe pain in the ear, with free discharge, and tenderness on pressure over the mastoid. The antrum and middle ear were curetted. The improvement resulting from the operation was soon followed by symptoms of brain abscess, viz., slow pulse, subnormal temperature, vomiting, pain in the back of the neck, restlessness, wild and profane language, exaggeration of tendon reflexes, severe pain in the head. An opening was made through the cranium an inch and a quarter behind the middle of the external meatus, and three fourths of an inch above Reid's base line. In this opening the brain protruded and was entirely free from pulsation. Temporal lobes explored with negative results The opening was then enlarged downward and the cerebellum explored, when there was a gush of pus. The patient survived the operation only an hour and a half. BACON.

115. While BARROW was chiselling a mastoid for a temporosphenoidal abscess, pus was seen to run from nose and mouth. At the post-mortem examination, a collection of pus was found under the right frontal lobe, escaping through a perforation in the

cribriform plate of the ethmoid by the side of the crista galli, and a tract was found running to temporo-sphenoidal lobe, in which was an abscess cavity. CHEATLE.

116. At a meeting of the Edinburgh Medical Chirurgical Society, LEITH exhibited the temporal bone of a girl aged fourteen years, who had symptoms resembling tubercular meningitis. At the post-mortem examination the middle ear was found carious, and an abscess was found at the junction of occipital and parietal lobes, measuring two inches across. CHEATLE.

117. At a meeting of the Medical Society of Australia, MOORE showed a girl aged nine years, who, having had discharge from the left ear for several years, suddenly was seized with a convulsion and coma, with right hemiplegia. At first operation pus not found; at second, five days later, two ounces of pus were evacuated from the temporo-sphenoidal lobe. Speech and power in leg regained, but arm remained weak with some contraction of fingers. CHEATLE.

118. Following are the notes of MORRIS's case: Patient, aged twenty-seven, male. Present illness began four weeks before admission to hospital (admitted Oct. 4, 1894) by sudden pain in the left ear, followed by a chill. On the third day of his illness he vomited, and continued to do so every day subsequently. Four days later he had a second chill, followed by delirium, which lasted ten days. During the period of the delirium he had several chills, but no earache during this time. When admitted, the pulse was 66, temperature below normal, respirations 20. No tender spots about the ear or cranium, but there was foul odor from the left auditory meatus. Internal jugular vein on the left side was like whip-cord and engorged. On Oct. 12th he had convergent strabismus and diplopia; left external rectus paralyzed; left pupil irregular in outline. He died Oct. 15th.

Autopsy.—Abscess found in the anterior part of the left hemisphere of the cerebellum about the size of an English walnut. Groove for lateral sinus (left) filled by plastic phlebitis for about distance of an inch above and below the abscess. Interior of petrous bone filled with inspissated pus. BACON.

119. Notes read before West London Medico-Chirurgical Society by BALLANCE: Boy, aged fifteen years; otorrhœa from left ear nine years; for five weeks headache, staggering, vertigo, vomiting, and nystagmus, subnormal temperature. At operation half an ounce of pus evacuated from anterior part of left lateral cerebellar lobe;

blood-clot subsequently formed in site of abscess with return of symptoms ; complete recovery on removal of clot. CHEATLE.

120. In THOMAS's case the patient had suffered with purulent discharge from the right ear for several years. The antrum was opened and cleared out, but with no improvement in patient's condition. No optic neuritis, slight vomiting at commencement of illness ; temperature raised throughout ; an abscess suspected, but patient too ill for further operation. An abscess in right lobe of cerebellum found at the post-mortem ; posterior surface of petrous bone carious. CHEATLE.

121. MURRAY first gives the after-history of a case of cerebral abscess operated on by him and reported in the *British Medical Journal* of Feb. 13, 1892. Patient had regained power in arm and leg, and remained in good bodily and mental vigor ever since. Of the two others, the first is a case of abscess in temporo-sphenoidal lobe following acute otitis ; the second, one of cerebellar abscess. An abstract of these cases was published in these ARCHIVES, vol. xxiv., page 115. CHEATLE.

122. Notes of case read by EVANS before Kidderminster Medical Society: Girl aged sixteen years ; otorrhœa for two or three years from right ear. One month before being seen by Evans had a fit, insensible for two or three hours, with twitching of left side of face, left arm and leg ; headache worse after fit ; strangeness of manner for two years. Right internal strabismus since fit, and complaint of "seeing double" with right eye, and great pain in frontal region, and shooting pains down right arm, and occasionally down left. Optic neuritis both sides. Plantar and knee reflexes absent. Temperature normal, pulse 72. Vomiting came on, pain increased, loss of power in left arm, delusions, patient finally becoming semi-comatose. Trephined over right temporo-sphenoidal lobe ; on directing aspirating needle well forward ; $3\frac{1}{2}$ ounces of fetid, oily pus evacuated. Death four days after. *Post-mortem :* Abscess size of hen's egg in right frontal lobe, with well-defined wall $\frac{1}{8}$ of an inch in thickness. CHEATLE.

123. JOEL's first case was that of a youth, eighteen years old, who was said to have suffered from otorrhœa and mastoiditis which lasted for only three weeks. Chiselling revealed no disease of the bone adjoining the dura. Nevertheless the wound did not heal, and three months later a second operation was performed, by which a sequestrum extending down to the dura was

removed. The increase in the symptoms (headache, vertigo, retardation of the pulse, and ultimately choked disc) necessitated the performance of a third operation, by which an abscess in the temporal lobe was evacuated. Recovery. The second case, a boy of eleven years, had for years suffered from fetid otorrhœa with a perforation of Shrapnell's membrane. Removal of the malleus, which was carious, did not reveal any disease of the attic. After some weeks sudden aggravation of the symptoms, with the development of vomiting, unconsciousness, and attacks of convulsions. Operation showed the bones and the dura adjoining them to be sound, but there was increased intracranial pressure. Repeated incisions into the brain made with a narrow bistoury did not reveal the presence of any abscess. Nevertheless the symptoms disappeared, and the boy got well. The author assumes that this was a case of leptomeningitis. NOLTENIUS.

124. REINHARD goes into an extensive discussion of the pathogenesis of sinus-thrombosis, and then describes two cases presenting very serious symptoms, and relieved by operation. One of these he had already presented at the Congress at Bonn. In the first of the two cases, an offensive collection of pus was found in the cavities of the middle ear and mastoid, without anything to point to the existence of a secondary disease of the brain. But as all the symptoms persisted, a second operation was performed which disclosed a discolored and non-pulsating dura, and behind this an abscess of the sinus, bounded at either end by purulent thrombi. Removal with the application of a tampon of iodoform gauze. The second case showed, besides the original focus of inflammation, multiple defects in the bone due to caries, and defects in the wall of the sinus. The abscess in the sinus had already undergone evacuation externally, and was shut in above and below by thrombi. As the pyæmic symptoms continued, the jugular was ligated at a second sitting, and, as suspicious symptoms also had developed in the other ear, which had hitherto been sound, this also was operated upon. Nothing, however, was found in the latter. Both cases were ultimately discharged cured with the ear free from discharge, and with a persistent retro-auricular fistula. Mention is also made of a third case treated with similar success. ZIMMERMANN.

125. MORTON ligatured the internal jugular vein, but death occurred from general peritonitis, due to ruptured pyæmic abscess of spleen. CHEATLE.

126. In DEANESLY'S case, a child of four years, after scarlet fever, followed by double otorrhœa, developed an abscess over the left mastoid region, and all the sympoms of pyæmia; the left internal jugular vein was ligatured, and the sinus explored, but found healthy, bleeding freely on incision. No rigors or vomiting after operation, but the patient died of exhaustion.

CHEATLE.

127. FRIEDENWALD'S patient, aged four years, first came under observation Oct., 1890, suffering with chronic suppurative otitis media of the left side. Sixteen months previously she had scarlatina and diphtheria, and the left ear had discharged constantly since then. An examination showed the presence of pus in the auditory canal, and a large polypus. The polypus and a piece of bone were removed. The patient soon afterwards had a chill, followed by a temperature of 103.6° F. As symptoms of retention of pus were well marked, an operation was performed Nov. 7, 1890, and a deep-seated abscess in the mastoid process was found. The walls of the same were scraped. The polypus returned, the otorrhœa persisted, and there was evidence of caries in the middle ear. Küster's operation was performed April, 1892, and a carious cavity exposed and scraped as thoroughly as possible. No sequestrum was found. The otorrhœa recurred and continued in spite of daily irrigations, etc., and removal of polypi until May, 1894, when a sequestrum found its way into the auditory canal, and when removed, consisted of a portion of a semi-circular canal, being 7 *mm* long, 2½ *mm* wide, and 3 *mm* in thickness. BACON.

128. GOLDSTEIN reports a case of a boy, six and one half years old, who three years previously had measles, from which he recovered without any aural complication. One year later, he had an intense earache lasting several days, followed by a copious discharge, which was present when he first came under observation. The auditory canal became closed, and swelling behind the auricle developed. The abscess was opened and 1½ ounces of green fetid pus evacuated. A sinus was discovered leading to extensively carious bone. Facial paralysis followed. An operation was performed, consisting of a free incision behind the auricle, which revealed considerable carious bone. Granulations, etc. were removed, and antiseptic dressings applied. For the following three months, the wound was kept clean and the dressings changed. A sequestrum was finally removed 36 *mm* in length,

18 *mm* in breadth, which included the cochlea and the deep structures. At various times subsequently, other sequestra came away. The sputum contained tubercle bacilli, and a diagnosis of miliary tuberculosis was made. The patient died. An examination of the temporal bone showed an extensive necrosed area.

BACON.

129. At a meeting of the Royal Academy of Medicine in Ireland, STORY related a case of sarcoma of the middle ear, the first he had seen in eighteen years among 12,000 aural cases. A polypus recurred again and again, the patient dying, in six months after the first removal, with a secondary growth in neck.

CHEATLE.

INTERNAL EAR.

130. SHIRMUNSKY, M. CH. Pilocarpine in diseases of the middle ear and the labyrinth. *Monatsschr. f. Ohrenheilk.*, No. 2, 1895.

131. DALBY, W. B. Hysterical (so-called) and functional deafness. *Br. Med. Journ.*, March 16, 1895.

132. MACKENZIE, H. A case of hysterical deafness. *Ib.*, March 16, 1895.

133. VAN DYCK, W. T. Hysterical deafness. A case. *Ib.*, May 4, 1895.

134. RANSOM, W. B. A case of functional deaf-mutism. *Ib.*, March 2, 1895.

135. MÉNIÈRE. A case of complete deafness occurring in the course of leucocythæmia. *Bull. et mém. de la soc. de laryng., d'otol.*, etc. Paris, Jan., 1895.

136. GRADENIGO, J. Acquired partial deafness for tones. *Intern. klin. Rundschau*, No. 44, 1894.

137. GRUBER, J. Upon morbus Menieri. *Monatsschr. f. Ohrenheilk.*, No. 6, 1895.

130. SHIRMUNSKY has seen good results from injections of pilocarpine in some recent cases of labyrinthine disease; but in old cases and in sclerosis the remedy was of no service.

KILLIAN.

131. After recording the case of a lady aged seventeen years who suddenly lost and suddenly regained hearing without cause, DALBY objects to the term hysterical, as, in the case of a special sense, like hearing, a patient cannot be under the impression that

she or he does not hear, the function being involuntary, in contradistinction to the hysterical paralysis of a limb; and as the function is perfectly performed, it is inaccurate to speak of "functional deafness." He then gives examples of true functional deafness due to violent emotional influences, etc., and then states that these latter cases help to show that there can be no true hysterical loss of hearing any more than there can be a hysterical loss of smell or of any other special sense. CHEATLE.

132. Notes read before the Medical Society of London by MACKENZIE of a girl, aged sixteen years. In January, 1892, slight attack of influenza, followed by earache in left ear; was politzerized, which caused sharp pain, followed immediately by deafness. Left ear discharged green fluid for a few days. Later, loss of power in limbs, and anæsthesia below neck came on. In March, 1893, Weir-Mitchell's treatment. Gained in weight, but no improvement in hearing. Use of limbs gradually regained. After two years, complete deafness in right and almost complete deafness in left; gradually regained hearing under Gilles's treatment. CHEATLE.

133. VAN DYCK'S case of hysterical deafness was that of a boy, age nineteen years, who lost his hearing and speech in three days, recovery occurring suddenly. History of self-abuse and a previous attack 14 months before. CHEATLE.

134. RANSOM relates a case of a male, aged nineteen years, who woke up one morning completely deaf and dumb; perfectly rational, communicating with friends by means of a slate. A year previously, had suddenly lost power of right arm for three weeks. No starting when loudest noise made unexpectedly behind back, but seemed occasionally to comprehend simple orders made before his face, such as a doctor might be expected to give. Anæsthesia of soft palate and loss of palate reflex noticed. At end of fortnight faradic current applied to larynx; speech and hearing returning immediately. CHEATLE.

135. In MÉNIÈRE'S case—that of a lady aged forty-three, who was suffering from a severe form of leucocythæmia—vertigo, tinnitus, and vomiting set in during a remission of the symptoms of the main disease. The right ear became deaf in a few days, and the hearing in the left grew worse gradually. No changes, either old or recent, were found on either side. The author mentions the case on account of its rarity and also because it serves to emphasize the views he holds in opposition to other

writers, that in his cases of Ménière's disease abnormalities are never found in the middle ear. ZIMMERMANN.

136. In one of GRADENIGO's cases the partial deafness for tones was congenital; in the second there was a neuritis of the auditory nerve possibly as the result of an intracranial gumma; in the third there was probably a traumatic hemorrhage into the cochlea. POLLAK.

137. According to GRUBER the name Ménière's disease should be applied only to primary affections of the labyrinth associated with vertigo, subjective auditory sensations, and deafness. The only condition requiring to be differentiated from it would be labyrinthitis. Gruber also points out that it is possible that changes in the aquæductus vestibuli and recessus Cotugni may produce Ménière's symptoms. KILLIAN.

NASO-PHARYNX.

138. ALLEN, HARRISON. Age and sex in diseases of the upper respiratory tract. *Am. Jour. Med. Science*, June, 1895.

139. MARTIN, WILLIAM. Some rhinological cases of interest. *Med. News*, Jan. 26, 1895.

140. SCHECH. Upon oral and nasal breathing. *Münch. med. Wochenschr.*, No. 9, 1895.

141. ZIEM. Nasal affections in general diseases. *Ib.*, No. 49, 1894.

142. FOURNIER. Chancre of the nasal mucous membrane. Hôp. St. Louis.

143. MAYER, EMIL. An unusual manifestation of hereditary syphilis. *N. Y. Eye and Ear Infirmary Reports*, Jan., 1895.

144. LOEB, HANAU W. Double nasal atresia due to smallpox. *Jour. Am. Med. Asso.*, Jan. 19, 1895.

145. HOPMANN. Two additional cases of complete unilateral atresia of the choanæ. *Arch. f. Laryngol.*, vol. i., part 3.

146. SPIESS, G. Upon the treatment of deflections of the nasal septum. *Ib.*, vol. i., part 3.

147. MEYJES, W. P. Upon nasal stenosis and its treatment. Amsterdam, 1894.

148. ANDERSON, P. L. Abnormalities of the nasal septum and their treatment in the cure of catarrh. *N. Y. Med. Jour.*, Feb. 23, 1895.

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155. WINGRAVE, W. Turbinal varix. *Lancet*, June 15, 1895.

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159. WRIGHT, JONATHAN. An osteo-sarcoma in the nose of an ox. *Med. Record*, April 20, 1895.

160. BERGEAT. The disintegration of sequestra in the nasal cavity and of rhinoliths by means of acids Remarks on a rhinolith. *Münch. med. Wochenschr.*, No. 12, 1895.

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162. DELAVAN, D. BRYSON. The prognosis in nasal operations performed during epidemics of la grippe and allied conditions. *N. Y. Med. Journ.*, June 8, 1895.

163. SHAH, I. M. Series of rhinoplastic operations. *Br. Med. Journ.*, Feb. 2, 1895.

164. BLOXAM, A. An artificial nose fashioned from a finger. *Lancet*, April 13, 1895.

165. BISHOP, S. S. Camphor-menthol. A supplementary report. *Journ. Amer. Med. Assoc.*, May 4, 1895.

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168. BERENS, T. PASSMORE. Ichthyol in rhinitis atrophica fœtida and in laryngitis tuberculosa. *Man. Eye and Ear Hosp. Reps.*, Jan., 1895.

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191. WHARTON, H. R. A case of glossitis, in which the membrane covering the tongue contained Klebs-Löffler bacilli. *Med. News*, April 15, 1895.

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138. In childhood, adenoids and congenital atresia interfere with nursing; foreign bodies give rise to wounds in mouth and pharynx, or are swallowed. Deflection of the septum is then not due to injury, but to errors in development or to the effects of occlusion. The frequent coincidence of adenoids and phimosis leads ALLEN to believe in their connection. Finally, belonging to this period, a case of ozænic odor is reported in an infant, due to crust-like exudation between the perpendicular plate and the lateral mass

of the ethmoid bone, which disappeared after removal. In youth, as the effect of prolonged strain, there appear vascular hypertrophies of the nasal mucous membranes, and post-nasal catarrh, associated with epistaxis. In young men, otherwise normal, congested mucous membranes with excess of secretion are frequently found, but never after the age of twenty-five years. In the transition of the treble voice the "break" is frequently unduly prolonged, and this defect in speaking may be due to slight catarrhal irritation, or be fundamental on account of asymmetry in the thyroid cartilage and hyoid bone.

In middle life and old age the basilingual lymphoid bodies and associated veins or swelling of the submaxillary and salivary glands may produce excessive flow of mucus. Asthma is then more dependent upon disturbances of the chest than upon that of the nose. Gouty conditions of the nose and throat, with a neurotic element, and vasomotor reflexes due to the menopause, are now observed. As to sex, the female suffers from aphonia, due to functional disturbances and pharyngitis from uterine and ovarian reflexes. Diseases of the pelvic organs may be maintained by the presence of a primary disease in the throat or nose.

What Allen terms incipient Basedow's disease was observed in several females as a condition wavering between chlorosis and hysteria, with a history of shock, and with throbbing of the carotid arteries, associated with enlargement of the thyroid body. At this period, nodules at the base of the tongue are frequently seen. Allen observed three cases of sclerosis of the tonsils in married women.

Morphological factors in the female sex are asymmetry of the middle turbinated bones and smaller development of the frontal sinus. Three cases of empyema of the frontal sinus were associated with empyema of the maxillary antrum. In four cases of atrophic rhinitis in young children, associated with defective development of the skull, three were in girls. Hyperostosis of the line of the inter-maxillary suture (torus palatinus) is common in women.

TOEPLITZ.

139. Three of the five cases reported by MARTIN are of real interest. Case 1 was an *angioma of the naso-pharynx*, observed in a female, aged forty, which filled the right side of the cavity; it was pulsating, and attached to the right lower turbinated body. No operation. Case 4 presented a *split septum*, an exudate filling the intervening space between the two plates. It was produced by a fall from a bicycle upon the face, probably by direct force upon

the bridge of the nose. Pressure approximated the plates and led to complete recovery. Case 5 exhibited an *angio-neurotic œdema* of the eye and left side of the face, due to the use of applications to the nose. TOEPLITZ.

140. SCHECH discusses at length first the physiological function of the nose for breathing, and then the causes and results of mouth-breathing, as far as we have any fixed ideas in regard to them. The following are given as among the results of mouth-breathing: Predisposition to catarrhal affections of the air-passages; changes in the soft parts and skeleton of the face, with their consequences for speech; malformations in the nose, such as obliquity of the septum and general stenosis; flat, narrow thorax; manifold subjective troubles, especially headache, which is so frequent; mental and psychical depression; and other more or less problematical consequences. MÜLLER.

141. ZIEM'S conclusions agree in the main with those of Heller (see No. 185). He also believes that the significance of the upper air-passages as a means of transmitting contagion has been decidedly under-estimated. He speaks of Hebra's view, now generally adopted, that the original site of measles is in the nasal mucous membrane. The frequency with which scarlet fever produces coryza is also considered. But the point that he goes most deeply into is the relationship of diphtheria to nasal disease, his citations from literature, and his own observations tending to prove that diphtheria frequently finds access to the system by way of the nose, and that the maintenance of the nasal mucous membrane in a healthy condition removes one of the most important predisposing causes of this disease. In like manner he considers the relationship between nasal diseases and influenza, malarial fever, typhus and typhoid fevers, yellow fever, the plague, meningitis, mumps, erysipelas, septicæmia, whooping cough, pulmonary phthisis, glanders, and granular conjunctivitis. His views, he says, agree with those of Harke, which are based upon numerous autopsies, and which assert that extensive and serious disease of the nose and accessory cavities occur in most infectious disorders, especially in children. The recognition of these diseases during life—and this constitutes the main point of Ziem's argument—is effected by the use of the test-injections that he recommended, and which are made with 1 per cent. salt solutions, best applied by means of a Zöllner force-pump. The same injections, furthermore, in conjunction with the application of

general hygienic principles, constitute the best prophylactic against almost all infectious diseases. As a curative measure, too, they are, according to him, extremely valuable in influenza and diphtheria, and, indeed, in severe cases of the latter, are indispensable, tending to prevent implication of the eyes and ears, and probably of the brain also. He is disposed to deny the value of Behring's serum in diphtheria. MÜLLER.

142. FOURNIER has observed five cases of chancre of the nares. Infection was produced either by the finger or sometimes by surgical instruments. As regards seat, chancres are to be distinguished into those of the introitus narium and those of the mucous membrane proper. In the former, the submaxillary glands are involved; in the latter, the glands beneath the sterno-cleido-mastoid. The beginning of the disease is almost always unnoticed. This condition must be differentiated from impetigo, and especially from erysipelas.

143. MAYER distinguishes the congenital syphilis occurring before the fourth month after birth from the hereditary occurring many years after. He reports two cases of mother and child, the former with acquired tertiary, the latter with inherited tertiary, syphilis. The mother, aged twenty-seven, presented nasal obstruction on the right side, which was dated only a month back. She had several miscarriages, but the daughter above referred to was apparently healthy when born. The nasal obstruction was due to a hemispherical mass, $\frac{3}{4}$ of an inch wide, filling the anterior nasal space, which microscopically was a gumma. A few days after removal an abscess of the septum was opened. Complete recovery took place.

Her daughter, aged seven, suffered at first from a severe interstitial keratitis. Three months later, when the mother's disease had subsided, she appeared with an ulcer over the nasal bone on the left side, $\frac{3}{4}$ of an inch in diameter, which, when probed, revealed necrosed bone. After curetting, treatment was interrupted for four months, when, in place of the former ulcer, a deep cavity was seen, $\frac{1}{8}$ inch in diameter, extending over the median line and down $\frac{1}{2}$ inch to the nasal orifice. The hard palate, the inguinal region, and the tibia, all presented ulcers on the left side. After treatment with irrigations, the anterior surface of septum was found to be superficially ulcerated, and below an annular destruction of the septum, with an orifice of $\frac{1}{2}$ inch in diameter, was present. The tip of a rubber catheter was inserted to prevent

retraction, and under energetic local and general treatment the ulcers all healed, leaving a decided depression externally, with but slight disfigurement, perforation of septum, and cicatricial adhesion between the lower inferior turbinated body and septum, with free breathing capacity.

A complete review of the opinions of other authors on similar cases are given in conclusion. TOEPLITZ.

144. In LOEB'S case, a female aged thirty, the anterior nares, which had been contracted to the size of a broom straw, were opened with the knife, whereupon the mucous membrane was stitched to the outer skin. The opening was kept apart by rubber tubes of the shape of Simrock's speculum, consisting of a short cylindrical tube with curved margin filling the introitus narium, which were permanently worn for three months with good final result. TOEPLITZ.

145. In both of HOPMANN'S cases there was narrowing of one side of the nasal cavity, the narrowing increasing from before backwards until in one case there was complete atresia, with the presence of a bony partition of considerable thickness and hardness, while in the other case the canal was reduced to a narrow chink, which was closed in by a membrane. In both, the occlusion was probably congenital. In the first case, empyema of the maxillary antrum and polypi developed in the side that was occluded. By an operation with chisel and galvano-cautery he was able to restore nasal respiration in both cases. Casts of the choanæ revealed marked asymmetry in both instances. ZARNIKO.

146. SPIESS'S paper really deals, not with the operation for deflections of the septum, but with that for thickenings of the latter. He uses a variety of instruments, which are set in motion by a very rapidly revolving electromotor (making 3600 revolutions a minute). The power is transmitted from the motor to the instruments by means of the spiral wire of the dental engine. The instruments are either trephines, drills, and burs, which resemble the corresponding dental instruments, or saws. The latter are attached to a special form of handle which converts the rotating movement of the spiral into a to-and-fro motion. Spiess ascribes to his procedure the advantages of great rapidity and of freedom from pain. For instance, he can in five seconds bore out a piece 3 *cm* long ; and thus in a short time he makes a number of holes one after another until the whole prominence is drilled away. Furthermore, opening of the maxillary antrum from the

inferior meatus or from the alveolar process is very easily done by means of his trephines and drills. If a sound is attached to the handle designed for one of the saws, massage of the mucous membrane can readily be performed ; and massage of the larynx can be done in a similar fashion by substituting Ewer's concussor. ZARNIKO.

147. MEYJES, in an essay written particularly for those who are not specialists, gives in a condensed form a view of the main causes of nasal stenosis. In deviation of the septum in adults he does not scruple to produce a perforation by sawing away the obstructing cartilage. He is likewise indifferent about saving the periosteum. A deviation to the left he found in about two hundred out of a total of three hundred skulls that he examined in the Amsterdam Anatomical Museum. Rhinitis caseosa, which, according to Meyjes, is a disease *sui generis*, was in two cases the cause of the obstruction. Of malignant tumors he found sarcoma in four cases with more or less pronounced metastases in the cervical region, and once he found a typical naso-pharyngeal polyp. In general he prefers the application of chromic acid to the galvano-cautery. He agrees with Hartmann that the so-called posterior extremities are more frequently the cause of stenosis and of deafness. The advantages of making an inspection or examination with sounds in obstinate catarrhs of young children is shown by some cases of the author's in which foreign bodies in the nose were found to be the cause of the condition. In one case both posterior rhinoscopy and laryngoscopy were rendered extremely difficult by the undue development of the two upper cervical vertebræ. By employing bougies of various sizes in the after-treatment of chronic hypertrophic rhinitis he has often been able to prevent relapses. He lays particular stress upon the treatment of constitutional affections, and of anæmia and constipation in women. He especially warns against the prolonged use of routine measures in place of proper local treatment seasonably applied. MEYJES.

148. The abnormities of the septum, discussed in this paper, are the spurs and ledges, and for their treatment a nasal saw has been devised by ANDERSON, which differs from the Curtis saw only in the shorter length of the cutting edge and in the roughened handle. TOEPLITZ.

149. Series of cases noticed by BRODIE and ROGERS of acute rhinitis among the Kaffirs employed in the mines, either causing

death in three or four days, or running a course of a month or two. In all, the one constant symptom was the livid, injected, and swollen state of the Schneiderian membrane. Meningitis and pneumonia found in those who died. Disease did not seem contagious. CHEATLE.

150. FELSENTHAL made a bacteriological examination of two cases of rhinitis fibrinosa in Baginsky's Polyclinic, and in one found no bacilli, in the other bacteria identical in shape with the Löffler bacillus, but less virulent for rabbits. His experience during recent years has inclined him more and more to the belief that this disease in most cases is only a variety of diphtheria, which has partially lost its virulence, but which may regain the latter under suitable conditions. Hence the importance of making bacteriological examinations in all cases of membranous disease of the nose. MÜLLER.

151. According to BEAUSOLEIL, rhinitis caseosa is not a disease *sui generis*, as many suppose, but may occur as a symptom of any kind of lesion of the nose—*e. g.*, deformation of the septum, hypertrophies of the mucous membrane, and foreign bodies. The products of secretion, derived from the nose or from its accessory cavities, and epithelia from the inflamed mucous membrane accumulate and then undergo putrid decomposition, due to the presence of a variety of micro-organisms. Among the latter is a filiform bacillus which is carefully described in Beausoleil's paper, and which occurs in such numbers as to form by itself considerable portions of the cheesy masses. The author criticises the observations that have hitherto been published, and justifies his own view by the histories of cases that he himself has observed. ZIMMERMANN.

152. VOHSEN says that in acute rhinitis in children gentle inflations of air into one nasal canal (the other remaining open) should be practised several times a day, especially just before meals. If necessary, the swelling should be reduced by cocaine before the inflation is done. In this way secretion is expelled out of the side that is left open. There need be no fear of producing infection of the middle ear, since the ostium tubæ, which in small children lies very deep, usually closes simultaneously with the palate. The mucous membrane itself is then treated with a 3 per cent. solution of boric acid in glycerin.

ZIMMERMANN.

153. HARTZELL reports the following case : A physician, aged

thirty-eight, had a mild follicular tonsillitis. On the third day after the attack an acute eczema appeared on chin, cheeks, forehead, palms of hands, thighs, and about the arms. Coincidently the inner surface of the lips and the mucous membranes of the tongue and cheeks were covered with tiny, opaque vesicles, causing a burning sensation, and after rupture leaving extremely painful ulcers. A week later groups of minute vesicles appeared upon the bulbar conjunctiva. The nasal mucous membrane now also exhibited an eruption of vesicles, causing coryza. Pain then appeared in both knees. This was the third attack of eczema that the patient had had, the buccal mucous membrane being the only one affected in the second attack. While some observers deny the occurrence of eczema of mucous membranes, which is certainly very uncommon, Hartzell believes that even the bronchial, gastric, or enteric mucous membranes may be the seat of eczematous inflammation. The treatment consists in the application of cocaine, of one-per-cent solutions of resorcin, boric acid solutions, and ointment of carbolic acid of a strength of one per cent. In eczematous conjunctivitis weak ointments of ichthyol are, according to von Sehlen, extremely useful.

TOEPLITZ.

154. LÖWENBERG repeats the description of the bacillus of ozæna which he gave in 1880 and 1881. It forms two kinds of colonies in gelatin-cultures: one, more rarely found, is small, round, yellowish, compact-looking, and embedded in the gelatin-mass, the other is larger, semi-transparent, more or less milky, and superficially situated. Neither kind liquefies gelatin. The cultures usually exhale an odor which is not unpleasant. The microbes of ozæna and pneumonia are very similar, but differ in the appearance of the colonies and in the odor. White mice die within twenty hours after the subcutaneous injection of a culture of the ozæna bacilli. Guinea-pigs stand injections beneath the skin, but are killed by intra-peritoneal injections; and the former do not render the animal immune against the latter. The majority of rabbits, too, are killed by the injections, but in one case immunity was produced. The bacilli die at 54° C., so that by raising the temperature of the culture-liquids to this point, the toxines alone will be left to exert an action. With the latter it was possible to render a mouse immune. The serum of a rabbit which had been rendered immune served to make another so, although it lost this property in a short time. Immunity against

Friedländer's pneumonia bacillus is no guaranty for immunity against the ozæna bacillus, nor is inoculation with the latter a protection against the former. BARTH.

155. WINGRAVE defines turbinal varix "as a particular form of hypertrophy which involves the posterior half of the inferior turbinal body, and is characterized by a permanent distension of the venous sinuses." In his paper the disease is fully described from all points; he advises removal by means of Carmalt Jones's improved ring-knife. CHEATLE.

156. RÉTHI examined a bleeding polyp removed from the septum and concludes that this form of growth, as well as polypoid hypertrophies in other spots, depend upon chronic catarrhal processes, and that there is no justification, either upon etiological or histological grounds, for making a distinct category of these tumors.

157. BIEHL describes two cases in which growths that had been removed turned out to be cavernous angiomata. The striking feature in both cases was the marked proliferation of the endothelium, such as ordinarily occurs in angiomata of the liver. The so-called bleeding polypi of the septum are a very different kind of growth as far as their pathological anatomy is concerned. KILLIAN.

158. At the Laryngological Society of London, BABER showed a patient who had a definite papillomatous tumor with a broad base, growing from the floor and septum of the nose. CHEATLE.

159. The ox examined by WRIGHT could not breathe through the nose. The nasal cavities were filled with an irregularly rounded tumor which measured 24 *cm* in its longest, 12.5 *cm* in its shortest diameter. It was attached to the inner surface of the external wall of the left antrum about 10 *cm* below the orbit, causing exophthalmus and destruction of the structures of the left side, and it had grown across through the septum into the right antrum, which was partly filled, while the left antrum was almost entirely obliterated. Three fourths of the mass was composed of cancellous bone tissue, the soft and external portions being irregularly lobular, with their capsule adherent to the bony wall of the nasal cavities, and containing also some cysts. The microscopical examination revealed the tumor to be composed of fibrous tissue, infiltrated with small, spindle-shaped cells, areas of œdema, the surface covered with cylindrical epithelium. The growth was probably the result of beating the animal over the nose. TOEPLITZ.

160. BERGEAT, after pointing out the advantages of removing sequestra from the nose as early as possible and the failure of the mechanical measures hitherto used, describes the experiments that he has made with regard to the effects produced by different acids upon pieces of bone, sequestra, and rhinoliths. He found that non-rectified hydrochloric acid is by far the best for the purpose, The acid is applied on a sound, the attempt being made to channel out furrows with it so that the sequestrum can be broken. The softened layer of bone is scraped away after each application. The author describes a case of syphilitic sequestrum, in which rapid diminution was effected by this means. The application of acids is also, he holds, indicated for such rhinoliths as have to be removed by disintegration. He also mentions a case in which a rhinolith was formed about a cherry-pit, and was removed with the forceps. MÜLLER.

161. BLACK reduces hypertrophies and engorgements of the lower turbinated bodies only, by removing a circular portion, which is $2\frac{1}{2}$ inches in length, along their entire extent by means of the nasal trephine. He claims that there is less damage done to the parts by this operation than by any other procedure. TOEPLITZ.

162. From his experience gained in epidemics of grippe during the last few years, DELAVAN arrives at the conclusion that the nose should not be surgically interfered with during such epidemics, since the operations will then be followed by an acute attack of influenza, and its results are apt to be disastrous. This is also true of hay-fever, and operations performed for it should be done long enough before the expected attack for the parts to become fully healed. TOEPLITZ.

163. Since 1885 SHAH has performed 228 rhinoplastic operations. In the great majority the nose had been criminally mutilated, women being the usual victims. The Indian or forehead flap method is by far the best for repairing the nose; other methods are discussed, with their advantages under certain circumstances. CHEATLE.

164. At the Medical Society of London, BLOXAM showed a man whose nose had been destroyed by syphilis; a new one having been formed from the stiff and useless middle finger of the left hand. The finger having been trimmed was applied to the face, the arm being supported by plaster of Paris; on union taking place the finger was detached from the hand. Alæ subsequently formed from the cheeks. CHEATLE.

165. The union of the two camphors, menthol and camphor, results in a fluid of the formula C_{10} H_{18} O, which, according to BISHOP, has proved most efficacious in coryza, hay-fever, intumescent rhinitis, hypertrophic rhinitis, simple sore-throat, acute laryngitis, tracheitis, bronchitis, and cauterizations to prevent hemorrhage and inflammation. It is used for home treatment in solutions of three per cent. in lanolin, in sensitive persons with hay-fever in weaker solutions, and after galvano-cauterizations by gently packing the nostril with a pledget impregnated with a 20 per cent. solution, which is also used to stimulate secretions in atrophic rhinitis. TOEPLITZ.

166. WROBLEWSKI speaks highly of the following solution for producing anæsthesia in operations upon the nose. Antipyrine, 2 parts, cocaine hydrochloride, 1 part, and distilled water, 10 parts. The author also says that he has seen anæsthesia lasting for ten hours produced in parts that were to be operated upon (larynx, palatal tonsil, lingual tonsil) by the parenchymatous injection of a 50 per cent. solution of antipyrine. No bad results were produced in any case. ZARNIKO.

167. HEDERICH reports in regard to ferripyrine, a double compound of antipyrine and ferric chloride. This compound is used like ferric chloride, over which it has the advantage that it does not produce cauterant effects even on prolonged application, and its hæmostatic action is nevertheless considerable.

MÜLLER.

168. BERENS has treated 78 cases of rhinitis atrophicans with pure ichthyol at the clinic and with a ten per cent. ointment to be used at home. Fifteen cases were not improved. He considers ichthyol curative in chronic atrophic rhinitis (ozæna) and in laryngeal tuberculosis. It excites secretion, is a deodorizer, an absorbent, and a local anodyne. TOEPLITZ.

169. In order to allow the remedies to remain in contact with the mucous linings for a long period, tenacious solutions should be applied. CHAPPELL uses a combination of zinc ointment and sterilized castor oil with hydro-carbon oil, in the proportion of from half a drachm to two drachms of the zinc and castor oil to one ounce of hydro-carbon oil. This so-called oleum hydro-carbon compound is the base of sprays or solutions, to which other drugs, such as boric acid, camphor-menthol, cocaine, etc., may be added, as the case requires. TOEPLITZ.

170. GLEITSMANN advocates the use of the galvano-cautery

snare for the removal of nasal polypi, refuting the charges made by P. Heymann against it. For the snare he uses platinum-iridium wire. Furthermore, he again advocates the use of trichloracetic acid after galvano-cauterization of the nose, adopting Moritz Schmicht's suggestion of using a weak boro-cocaine spray (1:500:1000) after the cauterization. Bleeding produced by the cautery favors reaction in the majority of cases, preventing the formation of a dry eschar. TOEPLITZ.

171. MINK, taking as his text several cases of inflammation of the ear that he himself observed, warns against the routine practice of making injections through the nose and especially against the practice of snuffing up the injections. He removes the crusts by means of an atomizer introduced into the naso-pharynx and by a probang armed with cotton. In children he removes masses of mucus by means of Politzer inflation. MEYJES.

172. ENGELMANN, following Zuckerkandl, groups under the title of catarrh of the frontal sinus all the diffuse inflammations of the mucous membrane of the latter, including mucous, mucopurulent, and phlegmonous inflammation (sinuitis frontalis serosa, seropurulenta, et phlegmonosa). He bases his description upon 15 cases which he observed in Killian's clinic, and compares his results with the statements given by other authors, which he has culled with noteworthy industry from literature. It is impossible in a short abstract to give all the new points that the author has added to our knowledge of the subject, but the following may be mentioned. He considers that in about 50 per cent. of the cases the sound can be passed from the middle meatus into the frontal sinus. To do this, however, it is frequently necessary to remove the main obstacle in the path of the sound, which is the operculum of the middle turbinated. To effect this " Killian carries the blade of a slender pair of nasal scissors upwards and backwards through the fissura opercularis and makes an incision close to the attachment of the operculum ; then passes a snare round the operculum up to the upper end of the incision and snares the whole mass off." The danger of Scähffer's method of entering the sinus from the region between the middle turbinated and the septum is satisfactorily demonstrated. Killian's method of opening the sinus from the outside is described in detail. Killian enters the cavity in the ordinary way, scrapes it out, and then passes a sound into the naso-frontal duct. He then separates the nasal bone from the frontal bone with the chisel, turns back the

latter together with periosteum and a fold of skin, and chisels down upon the sound, thus opening into some of the ethmoid cells. In this way, after the nasal bone has been replaced and the lower end of the wound has been stitched up, a wide canal is left between the frontal sinus and nasal cavity, through which the former can be treated and its condition observed after the cutaneous wound has closed. As far as 3 observations will admit of our judging, the results of the method are favorable. On the whole the results obtained from treatment in the cases described are not brilliant : 3 cases of acute catarrh got well spontaneously; of 10 chronic cases, 2 were cured and 1 was improved by operation, and the rest passed from observation. The paper concludes with a table in which are collected the results of operations in 120 cases gathered from literature, and with a detailed bibliography.

ZARNIKO.

173. After considering the difficulties which face us in making an accurate diagnosis of empyema of the frontal sinus, HERZFELD describes his method of operating, which may be summed up as follows : opening the sinus from the outside, removal of all diseased material, and, if necessary, dilatation of the natural passage into the nose by means of a specially devised instrument, which is figured in the paper. The author rightly condemns the operation of making a forcible entry into the sinus from the nose. Three histories of cases complete the article.

NOLTENIUS.

174. After some descriptive remarks upon the anatomy and physiology of the accessory sinuses, MYLES classifies the pyogenic conditions by separating those of the antrum from those of the other three sinuses. The inflammatory diseases of the antrum Highmori, again, are divided as regards cause, into those of dental and nasal origin, their relative frequency being demonstrated by 19 cases, among which 2 were directly, 2 indirectly, and 4 probably caused by the teeth, whilst 10, including 2 of the dental cases, presented polypi, and 1 was due to acute cold. In 8 the ethmoid and in 4 the frontal sinuses were implicated. In ethmoidal, frontal, and sphenoidal-cell disease, polypi were the cause in 7 out of 10 cases. For diagnosis, Myles used transillumination with much advantage, preferring a bank of parallel lamps, covered with a black cloth, aggregating sixty-six-candle power, and a four-candle power lamp in the mouth ; by changing the candle power in the bank, any power can

be used in the mouth. Unilateral umbræ indicated, with but one exception, a diseased antrum. He also washes the cavity through the natural openings or through a trocar, or uses the change of the head's position for diagnostic purposes. Myles advocates the early use of surgical measures for the removal of the pathological conditions. He prefers the opening of the antrum from the alveolus or canine fossa by means of the electric drill, and subsequent scraping with blunt and sharp curettes. Washing through the natural opening has also relieved, though not radically cured, the disease, but opening by Mikulicz's method from the lower nasal meatus has been unsatisfactory. The latter method yielded better results when carried out by sawing away the anterior end of the inferior turbinated bone, then clipping off a portion of its attachment to the superior maxilla, and subsequent passing the electric drill into the antrum ; curetting from this opening is difficult. Solutions of boric and carbolic acids and peroxide of hydrogen are best suited for after-treatment. In cases of ethmoidal or sphenoidal-cell disease, the floor is perforated by a small drill, after removal of the middle turbinated body, and curettes are valuable. In frontal-sinus disease, when an external operation is refused, an opening is made through the anterior ethmoidal cells along the infundibulum, by clipping, drilling, or curetting, thus removing a part of the nasal process of the superior maxilla whereby the severe headaches are greatly relieved. The paper concludes with a full report of twenty-four cases. TOEPLITZ.

175. STARR reports 4 cases of acute inflammation of the frontal sinus, in patients aged from twenty-three to thirty-one, 2 of which followed a cold after seven and nine days respectively, the 2 others developing ten days after influenza. Pain over the eyebrows, gradually increasing, with evacuation of discharge at intervals, were the most prominent symptoms. The infundibulum was patent in all cases. Tenderness on pressure over the sinus and also over the pulley of the superior oblique muscle was quite marked. Mustard applications rapidly relieved the pain. Complete recovery took place in five, three, seven, and eight days, respectively. TOEPLITZ.

176. In SYMONDS'S case, which he showed at the Laryngological Society of London, the patient had suffered with foul discharge from the left nostril for seven years and from the right for three years. The maxillary antrum was opened on each side, evac-

uating thick, foul pus; later, a swelling appeared in the centre of the forehead, just above the nose. On incising the swelling, foul pus escaped, and an opening was found in the bone a little to the left of the median line, leading into the frontal sinus; a curved probe was passed into nose and a piece of gum elastic bougie introduced, this being replaced later by a small silver cannula.

CHEATLE.

177. In NOLTENIUS's cases the maxillary antrum contained a clear yellow liquid, whose presence could be demonstrated by an exploratory puncture made from the nasal cavity. The subjective and objective symptoms were slight; usually a single aspiration with the syringe sufficed to produce a cure KILLIAN

178. MEYJES, in order to keep open the drill-hole made in the alveolar process, inserts into it a tube with a lid that shuts with a spring. No pus can then escape from the antrum into the mouth. The tube remains in situ, and irrigation of the antrum by the patient is a very easy matter for the patient. The tube, which is made of silver, or better of gold, is attached to the nearest molar tooth, or, in its absence, is provided with a palate-plate made by a dentist. MEYJES.

179. ZIEM demonstrates on two of Zuckerkandl's figures that in transillumination from the mouth light may pass from the nasal cavity in the region of the middle meatus into the orbit directly without traversing the maxillary antrum. He says that the absence of a subjective sensation of light when transillumination is done, is produced in many cases by undue thickness of the bony wall of the sinus, or perhaps by unusual pigmentation of the choroid, and that a subjective sensation of light may still be present even when there is a considerable collection of pus in the antrum.

KILLIAN.

180. GRÜNWALD'S patient, a man twenty-four years of age, had suffered for two or three years from a fetid discharge from the nose with the formation of crusts. Condition improved by opening the maxillary antra and the ethmoidal labyrinth. But afterwards a fetid secretion again formed, the origin of which turned out to be the frontal sinuses. These were opened, and their posterior wall was found to be destroyed by caries, so that the dura, which was somewhat thickened and granular, lay quite exposed to view. A tampon was applied. Ten days later occipital headache set in. The dura was incised, and the surface of the brain was found to be discolored. Soon after the operation

the patient had attacks of coma and convulsions. The cranium about the carious aperture was at once chiselled away, and a superficial mass of inflammation of about the size of a pea was found. An exploratory puncture gave no results. Eight days after the operation fluctuation developed at the spot, and upon incision, a teaspoonful of non-fetid pus was evacuated. The pain disappeared at once, and seven weeks later the patient was discharged. MÜLLER.

181. SNELLEN thinks that in orbital inflammations in which none of the usual causes can be found, the adjoining sinuses should always be examined. Although he has found scarcely any cases of a disease of the sinuses with secondary inflammation of the orbit described in literature, he himself has met with such a case, of which he gives the history. Some cases of empyema of the frontal sinus which were operated upon with success are also reported. Simple distension of the wall of the sphenoidal sinus, according to the author, is sufficient to render the optic nerve atrophic by pressure upon it during its passage through the foramen ; but the nerve will be even more readily affected by inflammation of the wall of the sinus, lying as it does for about 1 *cm* of its extent in contact with the latter. MEYJES.

182. HOPKINS reports twelve cases of recurrence of adenoids after radical operation, taken from his own practice and that of others, from which he arrives at the conclusion that, in children, complete and early removal under an anæsthetic is to be urged upon, and that more attention is to be paid to the after-treatment and the hygienic conditions, especially to that of the sleeping-room. The exhaustive literary references collected by Hopkins do not throw much light upon the question of recurrence.

TOEPLITZ.

183. EUSTACE SMITH is the first general physician of eminence who has written upon the importance of diagnosing and removing adenoid growths in children ; in his very interesting paper he describes the general as well as the special sense symptoms caused by them, drawing special attention to what has been termed "infantile respiratory spasm," or the croaking of newborn children, and also to the retraction of the chest-walls below the nipples, and depression of the ensiform cartilage in young children.

He advocates immediate removal if any symptoms are present, and careful watching if growths are present but cause no symptoms. CHEATLE.

184. HERMET was led to confine within narrower limits the indications for operating upon adenoids by a case in which the operation that he proposed was declined, and which he watched for years afterwards without being able to notice any ill effects. Out of a total of 103 cases he has had to operate upon only 14. Where there are no aural complications, headache, indisposition to work, or interference with development, he simply waits and has the patient carefully watched. If an otitis media sets in, he scrapes the adenoids out, and the otorrhœa gets well in a few days. The operation itself he regards as by no means free from danger, as, apart from the possibility of hemorrhage, there is the risk from the anæsthetic and the chance of producing meningitis.

ZIMMERMANN.

185. Starting from the assumption (1) that most, or, excepting cholera and dysentery, perhaps all, infectious diseases are inhalation diseases; (2) that their primary localization is in the nose and pharynx; (3) that they are localized there during the whole period of incubation; and (4) that the general infection takes its origin from this as a starting-point, HELLER has become convinced that the Alpha and Omega of any treatment directed against an infectious disease must consist in a thorough irrigation of the naso-pharynx. The very first irrigation is usually followed by a marked fall of temperature, immediate euphoria, and a simultaneous improvement in the local symptoms. This good result is most apparent in facial erysipelas and angina, which are sometimes actually aborted; and the method wins no less triumph in diphtheria both of the fauces and larynx. In diphtheria, indeed, proper irrigation may obviate tracheotomy, as Heller has seen in a number of cases in which that operation seemed unavoidable; the so-called septic form of the disease, however, being an exception. Immediate good results with diminution in the number of paroxysms and shortening of the course were obtained in whooping cough. In scarlet fever and measles, irrigations are of great value not only for prophylaxis, but also for relieving the nasal obstruction and its consequences, such as difficult expectoration, torpor, headache, etc. Likewise amenable to this treatment are the glandular swellings pathognomonic of German measles, and in general all the so-called scrofulous glandular swellings, since they are often simply the result of naso-pharyngeal disease. In tuberculosis an essential improvement is produced in the expectoration, and the disease, in its inception,

may actually be eliminated. Typhoid fever, which Heller reckons as being also among the inhalation diseases, he combats with similar success, especially as regards such symptoms as headache and stupor; and the same remarks apply to acute articular rheumatism. Lastly the irrigations find application also in pneumonia and bronchitis (as a good expectorant), in eczema in children, and in typical and atypical neuralgiæ of the head. The irrigations, two or three of which a day are sufficient, are made with a simple rubber bulb having a pointed tip. The substance used is boiled water, the temperature of which is regulated according to the idiosyncrasy of the patient, the external temperature, and the height of the fever. The stream should be injected horizontally and should never be strong [*Cf.* No. 141]. MÜLLER.

186. Retro-nasal pharyngitis, although frequent, is but little known. VACHER distinguishes two forms, the simple chronic, and the granular. It is usually met with in children and, in the majority of cases, depends upon the general condition, which should, therefore, always be taken into account. For local treatment cauterization must be employed; massage also exerts a favorable action. The disease is dangerous only through complications affecting the Eustachian tubes and middle ear.

187. GRIFFIN describes the case of a girl, aged nineteen, who exhibited a slight congestion together with isolated grayish-white spots of the pharynx, without cough, or lesion of larynx and lungs, but with fever and tubercle bacilli in the sputum. The spots enlarged, ulcerated, and coalesced, and later on the lungs also became involved. Death ensued in four months. TOEPLITZ.

188. The difference between LIEVEN'S and the ordinary methods of treating those severe and uncommon cases in which the arch of the palate and the velum palati are totally adherent to the pharyngeal wall consists mainly in the after-treatment. In the period immediately following the operation Lieven applies a tampon of gauze impregnated with europhene. This is changed two or three times in ten days. After that he uses a rubber ball, which is prolonged into a tube of the same material, and which is introduced into the naso-pharynx by means of a rubber catheter passed through the nose. The tubular extremity projects out in front of the nose, and through this the ball can be distended with air. During the first two or three weeks, this apparatus is inserted every day for four or five hours at a time, later for only two or three hours, and, after a time varying from two to three months, according to the tendency that the scar

shows to shrink, is applied only four or five times a week. The advantage that the bulb has over rigid forms of apparatus or over compact tampons consists in the greater energy of its distending action, the smaller amount of pain which it causes, and the comparative facility which it affords for treating patients who are going about. A favorable result can be anticipated in comparatively recent cases only. MÜLLER.

189. MACHELL'S patient, a girl aged ten, suffered for two years from an excessive enlargement of both tonsils, which literally filled the throat and consisted of numberless pedunculated masses. The patient died from diphtheria and scarlatina, and one tonsil was easily enucleated after death with the forefinger. Two photographs of the condition during life and of the specimen accompany the paper. The report of the microscopical examination is rather obscure. TOEPLITZ.

190. MARCEL removed the tonsils with the cold snare in fifty cases, and regards this method as indicated in timid children and when the tonsils are very large. POLLAK.

191. WHARTON'S patient, a child aged six, could neither swallow nor close the mouth on account of swelling of the tongue, more marked on the right side, which partly protruded and was coated with a thick membrane covering the dorsum, right lip, and inner surface of cheek. There were swollen glands, profuse salivation, sitting posture, and a temperature of 101° F. The membrane, easily stripped off, contained Klebs-Löffler bacilli, and the affection was cured by repeated incisions, which removed blood and serum only. TOEPLITZ.

192. The fact that in many instances of so-called globus hystericus enlargement of the lingual papillæ is the cause of the paræsthesia is exemplified by several cases reported by SIKKEL. The latter was able to relieve the patients of their symptoms by removing the papillæ with caustics. MEYJES.

193. True stammering is characterized by the fact that it begins in childhood, is dependent upon a typical respiratory movement, intermits at times, and disappears in singing. CHERVIN theorizes in regard to the treatment, and then describes the method devised by his father, and which consists of exercises performed three times a week and requiring to be continued by the patients themselves for a varying time after their discharge from the Institute. The last section of the article treats of cleft palate and its treatment by operation and prothetic apparatus.

ZIMMERMANN.

194. One day after a double tonsillotomy in a boy aged four, with adenoids, hypertrophied tonsils, and gingivitis, due to carious teeth, the stumps of both tonsils were found to have been covered with a thick pseudo-membrane, extending also over the anterior pillars, with swelling of the submaxillary glands, high fever, vomiting, etc. The cultures made from the membrane contained diphtheria bacilli and streptococci (mixed infection). On the following day croupous cough with laryngeal stenosis necessitated intubation. The patient recovered. CAILLÉ reiterated the prophylactic measures for diphtheria, recommended by him in 1888, on the ground that the micro-organisms in the naso-pharynx and carious teeth are without danger until they are stirred up, as has been proven of late by the investigations of Chantemesse, Kurth, Dörnberger, and others, particularly Biggs and Park, who found diphtheria bacilli in the mouth of some patients as late as five weeks after recovery. Caillé, therefore, advises washings with solutions of salt or boric acid, as a safe prophylactic measure in persons exposed to infection from pertussis, measles, and scarlet fever, and before the removal of adenoids and tonsils. Carious teeth should be removed before operations upon adenoids and hypertrophied tonsils.

TOEPLITZ.

OBITUARY.

I.—**Dr. Wilhelm Meyer of Copenhagen.**—On June 17th, while returning from a pleasure trip, Dr. Wilhelm Meyer, honorary doctor of the medical faculty at Halle, died at Venice from cholera morbus.

The discoverer of adenoid vegetations and the author of the classical monograph on the same has erected to himself, by this scientific achievement alone, a monument, "*ære perennius*"!

May his memory always be honored! Moos.

II.—**Salomon Moos,** born July 15, 1831, at Randegg, a village in the Grand Duchy of Baden, died July 15, 1895. Educated by his worthy parents to take life serious, he rose by his own efforts from lowly circumstances to an eminent position. After receiving his earliest education in the elementary school of his birthplace, he attended the Israelitic grammar school at Müllheim, where he devoted himself principally to Hebrew literature, in which he made himself so proficient, that as a boy he received the title of *chaver* (associate). He then entered and attended, always in restricted circumstances, the whole course of the lyceum of Karlsruhe. He studied medicine in Heidelberg under Henle, Hasse, Moleschott, Chelius, and others, graduated in Heidelberg, passed his state examination in Karlsruhe, was assistant at the medical clinic of Professor Hasse for two years, went, to further perfect himself, to Prague and Vienna, began to practise in Heidelberg in 1856, and passed his examination as a lecturer (Privat-Docent) at the university in 1859. The title of his thesis was: "The Influence of the Occlusion of the Vena Portæ on the Formation of Sugar in the Liver."

Shortly afterward he married Miss Sophie Haas of Karlsruhe, with whom he lived most happy up to his death. From the year 1859 he devoted himself specially to the study of otology, in

which he received the kindest assistance from Fried. Arnold, Professor of Anatomy, who was distinguished both by technical skill and scientific attainments. One day the professor told the young doctor: "You have selected the hardest bone of the human body." In his practical studies of otology, Moos enjoyed the ever-ready assistance of A. Politzer, with whom he remained in the most intimate friendly and scientific intercourse all his life. His anatomical labors induced him to translate the text-book of the English otologist, Toynbee, who was principally distinguished for his anatomico-pathological investigations. Thus he entered the current of modern otology, which at that time was so successfully cultivated in Germany by Tröltsch, Schwartze, and others. After publishing a number of articles in the *Archiv für Ohrenheilkunde*, and elsewhere, he made known the results of his studies and experiences in a text-book, *Clinic of Ear Disease*, Vienna, Braumüller, 1866. Judiciously using the incident literature, Moos presented an unusually clear picture of the status of otology of that time, showing that he had mastered the whole field, not only from books, but from personal experience.

In the ARCHIVES OF OPHTHALMOLOGY AND OTOLOGY, edited in the German and English languages since 1869 by Moos and the writer of these lines, he was at the head of the otological department of the German edition. When from the eighth volume each department of the ARCHIVES was issued independently, Moos edited the German otological department, under the title, *Zeitschrift für Ohrenheilkunde*, until his death. In his editorial work he distinguished himself by industry, punctuality, conscientiousness, and unbiased judgment. He published the greatest part of his investigations in the *Zeitschrift für Ohrenheilkunde.* His continuous endeavor to make himself proficient in all branches of his specialty by personal labor and experience fitted him especially for the position of an editor, and has essentially contributed to the success of the *Zeitschrift.* In his practice he was rational, careful, and persevering. He may, perhaps, not have kept pace with the development of the so-called radical surgery of the German and English schools, namely, the thorough treatment of the severe suppurative processes and their consequences to the extent that without doubt he would have done if an exhausting and fatal disease (diabetes) had not weakened his energy during the last years of his life.

In the first seven volumes of the ARCHIVES OF OTOLOGY, 1869–

76, he published thirty-one articles, upon which we need not here dwell. They are compiled in the general index of the seventh volume of the ARCHIVES, page 558. We should like, however, specially to call attention to his paper upon "The Blood-vessels and the Circulation of the Drumhead and the Handle of the Hammer" in the sixth volume, illustrated by two excellent double plates. His last publication in this series was on "The Combined Occurrence of Disturbances in the Organs of Sight and Hearing."

In the second series of seven years (1879–85), the first seven volumes of the *Zeitschrift für Ohrenheilkunde*, he published, according to the compilation in the English edition, forty-seven papers.

In the third series (1886–92) there appeared, according to the compilation in vol. xxi. of the English edition, seven papers by himself and three in conjunction with Dr. Steinbrügge.

Since 1892 Moos communicated six articles in this periodical. Besides the above papers he published a number of articles in Virchow's *Archiv* and other journals, furthermore the following MONOGRAPHS:

1. *Contributions to the Normal and Pathological Anatomy and Physiology of the Eustachian Tube.* Bergmann, Wiesbaden, 1874.

2. *On Epidemic Cerebro-Spinal Meningitis, and in Particular on the Combined Disturbance of Audition and Equilibrium as Sequels of this Disease.*

3. *General Etiology of the Diseases of the Ear and their Relations to General Diseases*, being the 12th chapter of Schwartze's *Handbook of Ear Diseases*, vol. i., pp. 472–600, 1892.

Every page of this excellent work testifies to the industry, accuracy, and profound knowledge of its author. The bibliography alone occupies 17 closely printed pages. Yet Moos, by precision and conciseness of language, has succeeded in doing justice to this extensive material in 112 pages. "The monograph is not only an enumeration of the general causes of disease, but also a description of the anatomo-pathological, and, as far as our knowledge goes, bacteriological changes in the organs under consideration, and, furthermore, a description of the symptoms of disease; it is consequently a pathology of the auditory organ."

All this gives evidence of the great energy and perseverance of the deceased investigator. He has made valuable contributions

to all branches of otology; in one, the pathology of the inner ear, both in its normal aad pathological condition, he was a pioneer. His numerous descriptions, illustrated by the most beautiful drawings, contained in the volumes of these ARCHIVES, are not only a monument to their author, but will remain fundamental for future researches. In macroscopic and microscopic anatomy Moos may be placed at the side of the best investigators; in the examination of the pathology of the labyrinth he stands at the head.

Regarding his academic position, we may mention that his scientific work soon furnished him with the title of professor extraordinary. His clinical courses and lectures led to the creation of an official *otiatric policlinic*, which he conducted indefatigably up to his end. In the course of years he made a collection of excellent normal and pathological specimens, which in fine microscopic preparations seems to be unexcelled. There being, as yet, no official professorship of otology at the German universities, the Grand Duke of Baden, to honor his merit, not only gave him the title of counsellor, but appointed him professor honorarius. What he has initiated and accomplished will be the gain of his successors at the university; his scientific achievements remain recorded in the annals of otology.

HERMAN KNAPP.

NEW YORK, Sept. 23, 1895.

MISCELLANEOUS NOTES.

WILHELM MEYER MEMORIAL.

The following letter has appeared in the London medical and lay press :

SIR : With your permission we wish to enlist the interest of your readers in a movement of a somewhat unusual character. Twenty-seven years ago Dr. Hans Wilhelm, Meyer, of Copenhagen, recognized that an enlargement of the glands situated between the nose and the throat, to which he gave the name of "adenoid vegetations," was the most fertile cause of deafness and imperfect nasal respiration in children. This discovery represents one of the most important practical advances of modern medicine.

Already many thousand persons, through the timely removal of the enlarged glands, have been saved from lifelong deafness or from the lasting consequences of obstructed respiration ; and it may be safely said that to no one of our contemporaries are we more deeply indebted for the development of a healthy mind in a healthy body of the rising generation than to Hans Wilhelm Meyer. On the recent death of this eminent man it was felt that his unusual merits deserved unusual recognition, and the proposal to erect a statue to him at Copenhagen has met with a most sympathetic reception not only by his fellow-countrymen but also by the medical profession of other countries.

Her Royal Highness, the Princess of Wales, has most graciously consented to give her patronage to the scheme, and has expressed her sincere gratification at the idea that so eminent a fellow-countryman of her Royal Highness should be thus honored.

The Municipality of Copenhagen have promised to grant a suitable site for the statue, and at this moment, in almost every country, committees are being formed for the furtherance of this object.

Whilst as a rule the medical profession, when they wish to honor their great living or dead, confine their appeals to the ranks of the profession itself, in the present instance it is thought that an opportunity should be given to the numberless parents of children whose sound development and the preservation of whose hearing have been rendered possible by Dr. Meyer's discovery, to show their gratitude by contributing towards a memorial in appreciation of his great services.

We therefore, through the medium of your columns, venture to invite subscriptions, which may be sent to our Honorary Treasurer, A. E. Cumberbatch, Esq., F.R.C.S., 80 Portland Place, London, W., and will be duly acknowledged in the journals.

We remain, Sir, your obedient servants,

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Each of the American physicians here mentioned will receive contributions, and the editor of These Archives will transmit them to the treasurer of the English committee.

APPOINTMENTS.

Professor Dr. Koerner of Rostock and Professor Dr. Siebenmann of Bâle have been called to Breslau as successors to Gottstein, but have declined; Professor Dr. Barth of Marburg, however, has accepted the call.

Dr. Ostmann of Königsburg, has been appointed Professor of Otology and Laryngology at the University of Marburg, Prussia, in place of Professor A. Barth.

Gerard Carré, M.D., has been appointed House Surgeon to the Royal Ear Hospital, vice Colin Matheson, M.B., resigned.

BRITISH LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL ASSOCIATION.

The following is the list of office-bearers elected on July 25, 1895: President: Mr. G. Stoker, London; Vice-Presidents: Dr. Ed. Law, London; Dr. Middlemass Hunt, Liverpool; Dr. William Milligan, Manchester; Council, Metropolitan: Dr. W. McNeil Whistler (ex-officio), Dr. Dundas Grant, Mr. Mayo Collier, Mr. Wyatt Wingrave, Mr. G. C. Wilkin; Extra Metropolitan: Dr. J. M. E. Scatliff, Brighton; Mr. John Bark, Liverpool; Honorable Secretary: Dr. Peyler.

DONATIONS AND LEGACIES.

The Royal Ear Hospital authorities have received a donation of twenty guineas from the Merchant Tailors' Company, toward the New Building Fund.

Contents of the last number (Vol. xxvii., 2), **of the Zeitsch. f. Ohrhk.,** issued August, 1895.

H. KNAPP. Two Cases of Fatal Otitic Brain-Disease. (Two chromo-lithographic plates.) Original in April number of this volume.

A. SCHEIBE. Anomalies of Formation of the Membranous Labyrinth in Deaf-Mutes.

IDEM. Histology of Deaf-Mutism from Otitis Interna. (Both papers in this number.)

W. VULPIUS. Influenza Otitis with Epidural Abscesses. (The original appeared in the April number of this volume, p. 131.)

S. VON STEIN. Disturbances of Equilibrium in Ear-Disease (will appear in our January number).

FR. BEZOLD. In the Interest of our Future Otological Literature. Personal Controversy (not to be translated).

Report on Progress.

Report on the Meeting of the German Otological Society, held at Jena, June 1 and 2, 1895. Translated in this issue.

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